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ENVIRONMENTAL
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ssachusetts Department of Natural Resources | Arthur W. Brownell, Commissioner | March-April 1973 | Number Six

HEY, BROTHER, CAN YOU SPARE AN ENVIRONMENTAL JOB?

Everybody these days—from high school drop-outs to Ph.D.'s to middle-aged sufferers of occupational menopause—seems to want to work in the great outdoors. But alas, forestry and conservation jobs—those invigorating and wholesome forms of outdoor employment—are few and far between in Massachusetts. However, hold on! Environmental engineering and science jobs, while not necessarily assuring work outdoors, are geared to making the world a little bit greener and cleaner. And these jobs are about to boom. The environmental employment situation in the state in indicated below.

Old-line Conservation Jobs—Forestry, park and recreation management, fisheries and wildlife conservation are examples of these. Most old-line conservation jobs are found in government.

Presently job opportunities with the federal government here in Massachusetts are minimal. With the exception of the Cape Cod National Seashore, federal lands are not extensive in the state and therefore employment in conservation management is very limited. In areas where jobs exist, personnel turnover is small. To top it off, Washington has slapped an indefinite freeze on further hiring.

Conservation job opportunities are not much better on the state level where an austerity budget is also in effect. The Department of Natural Resources is flooded with applications for forestry, park and recreation jobs, but the Department has few openings. Similarly the Division of Fisheries and Game is deluged with applications for the few available wildlife and fishery conservation jobs.

Prospects—Crash programs such as the Emergency Employment Act and the U. S. Department of Labor's Manpower Development Training Program have tried to open up public service jobs, including environmental jobs. But funds are running out and the continuation of these programs is in doubt.

Unquestionably the need for conservation work exists. Dr. Benjamin Isgur, head of the U. S. Department of Agriculture's Soil Conservation Service in Massachusetts, states: "We need literally teams of experts—soil scientists, biologists, foresters—to survey the state's natural resources and advise towns and industries on proper land use, solid waste disposal and conservation management." Kenneth Crossman, Director of DNR's Division of Law Enforcement, estimates that to deal effectively with burgeoning environmental needs in the state the Department of Natural Resources would have to triple the number of personnel in environmental enforcement.

Indoors: *marine biologist at work, Cat Cove Laboratory, Salem*
Outdoors: *law enforcement officers in the field*

Even when federal and state funds become available, it is dubious that there will be a substantial increase in old-line conservation jobs. Odom Fanning, noted environmentalist and writer, projects that by 1980 the national need for parks and recreation personnel will have risen only about 2 percent, resulting in an employment total of approximately 220,000 people. A similar projection for wildlife conservationists indicates a 25 percent increase in need by 1980 and therefore a potential labor force of 20,000. But these anticipated increases, when spread over the next seven years in 50 states, can hardly be termed an environmental job boom.

In sum, short-range prospects for old-line conservation jobs are bleak; long-range expectations for the growth of outdoor conservation opportunities are not spectacular.

New Environmental Jobs—Ecologists, environmental engineers, geologists, land and water resource planners, marine scientists, industrial hygienists, environmental lawyers are just a few examples of professional people needed to fill skilled environmental positions.

The federal job freeze extends to the U. S. Environmental Protection Agency. Charged with combating air and water pollution, solid waste and noise pollution, EPA is the primary federal organization that normally would be utilizing large numbers of environmental scientists, engineers, planners, lawyers and other specialists. The job situation differs little in state agencies, although some agencies, such as Massachusetts' Division of Water Pollution Control, are hiring a few civil and sanitary engineers.

The private sector holds a much brighter picture, however. As Mike Masters, environmental employment specialist and Vice President of Personnel Systems International, puts it: "Funds aren't flooding into the environmental sector and it's a bootstrap operation so far, but companies are hiring." Masters notes that companies are looking particularly for engineers—civil, sanitary, chemical, mechanical and electrical. Salaries range from $11,000 to $28,000, with recruitment emphasis on junior slots for college graduates with at least two years of practical engineering experience.

There is a hitch though, says Masters. Most of the recruiting is from out-of-state because although Massachusetts is long on talent and brainpower, it is short in the number of big companies directly involved in the manufacturing of environmental control equipment. But if a person is willing to relocate—especially either in southern or mid-Atlantic states—openings are plentiful not only for engineers but also for land and water resource planners, computer experts, and mining, gas and paper technology specialists.

In terms of Massachusetts itself, even more encouraging is the growing environmental consulting field, especially engineering consulting. Ted Lesperance, Vice President of Anderson-Nichols, Boston-based architectural and engineering consulting company, claims that about half the firm's personnel have environmental science backgrounds, and the number is growing.

David Horsefield, Senior Vice President of Camp, Dresser and McKee, the largest firm in the country specializing in environmental engineering, says that his company is hiring and training many graduates, but especially sanitary and civil engineers. "The brass tacks of our work," says Horsefield, "are water and sewerage studies and the design and supervision of sewerage construction. But we are also looking for people with general backgrounds in environmental sciences to cope with the growing complexity of today's environmental problems."

Opportunities are also beginning to open up for students. For example, a Massachusetts Audubon Environmental Intern Program, run by John Cook, seeks to place graduate and undergraduate students, even high school students, in environmental intern jobs. The jobs involve such work as legal or economic analysis and open-space or solid-waste planning in either government or private organizations.

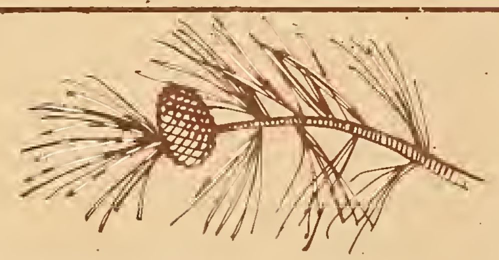
The program's purpose is two-fold: to provide students with opportunities for acquiring job experience essential for later employment and to supply agencies, at little cost, with much-needed personnel. The program pays the intern's expenses and in some cases includes a financial stipend and academic credit. So far Cook has located jobs for students with backgrounds in law, architecture and design, political science, landscape and resource planning, and business. (For information write: John Cook, Massachusetts Audubon Society, Lincoln, Mass. 01773.)

Prospects—Until government shifts priorities and money to the environmental sector, growth in environmental jobs will be limited. There is little doubt, though, that the 1970s will be the environmental decade. Odom Fanning estimates that jobs in environmental management—ecology, earth sciences, resources, recreation and environmental protection—will double in the next seven years, from about 655,000 jobs in the country now to over 1.2 million by 1980.

In Massachusetts the trend in new environmental jobs is already under way. Big research-manufacturing companies like Raytheon and LFE, converting from defense to such commercial areas as environmental control equipment and instrumentation, will be seeking more and more people trained in the environmental sciences. Environmental engineering consulting firms are expanding rapidly. And smaller consulting companies, performing functions ranging from water testing to writing environmental impact statements, are setting up shop all over the state. The proliferation of firms involved with environmental problems is reminiscent of aerospace's golden years in the early 1960s along Route 128.

This trend should accelerate as federal and state funds are made available, antipollution technology is improved, and more environmental legislation is passed. The spin-off from all this activity will undoubtedly generate an environmental service industry that will require lawyers, planners, wastewater treatment and incinerator plant operators, computer technologists, ecologists, geologists, marine biologists, industrial hygienists, as well as a host of jobs that haven't even been invented yet.

While no one can predict exactly when the boom in environmental jobs will come (some experts say it is already here), one thing is certain: depression days for new environmental jobs, especially in environmental sciences and engineering, are now in the past.



OLD-LINE CONSERVATION JOBS: STATIC

Conservation Helper is a maintenance man. In the DNR his tasks include forest road repair, culvert and drain cleaning, care of trees and shrubs, and maintenance of sewerage systems, bathhouses, parking areas and campsites. His work may also include forest fire fighting and assisting in fish and wildlife improvement programs. Similar positions exist in the U. S. Bureau of Sport Fisheries and Wildlife and Massachusetts' Division of Fisheries and Game. Employment as a conservation helper is in many cases the first step up the ladder in a conservation career.

Fishery Biologist may be involved with fish management, fish culture, administration, teaching or research. Research might include estuarine surveys; investigation of spawning activities, distribution and migration trends of fish; evaluation of the effects of oil spills on the growth and survival of shellfish and finfish; or calculation of the impact of thermal discharges on marine life. A number of organizations operating in the state — such as the Woods Hole Oceanographic Institute, the state Divisions of Marine Fisheries and Fisheries and Game, and the U. S. Bureau of Sport Fisheries and Wildlife (Northeast Region) — employ fishery biologists.

Forester is concerned with the management of forest land resources. His work includes supervision of reforestation work, assistance in locating timber for sawmills, forest research and education. To aid in protecting woodlands against forest fires and tree diseases, a forester marks trees for thinning, pruning or cutting. In Massachusetts the Department of Natural Resources, the Metropolitan District Commission, a number of private forestry associations, lumber companies and a few towns employ foresters.

Natural Resource Officer in the DNR is essentially a law enforcement officer who works on both land and sea. Using land vehicles, helicopters and patrol boats, natural resource officers enforce hunting, fishing and trapping regulations as well as all forest fire, forestry, motorboat, snowmobile and marine fisheries laws. A resource officer also investigates water pollution violations and enforces the state's coastal and inland wetland laws. His federal counterpart is the park ranger whose job is to protect a National Park area. In Massachusetts rangers are employed at the Cape Cod National Seashore and Minuteman National Historic Site.

Park or Forest Supervisor in Massachusetts manages the state's forest and park lands. A supervisor is in charge of maintaining recreational facilities and roads, controlling insect pests and directing forest fire operations. A good deal of time is devoted to patrolling picnic and camp areas to assure that visitors comply with park regulations. MDC also employs park and recreation supervisors.

Wildlife Conservationist is involved in wildlife management. This work entails providing food, water and cover for wildlife in order to maintain a proper balance between animals and other ecological interests. Recreational activities such as hunting, fishing, or just observing wild species are made possible by wildlife conservation. A wildlife conservationist is also engaged in research, information and education and enforcement of fish and game laws. In Massachusetts the Division of Fisheries and Game, the U. S. Bureau of Sport Fisheries and Wildlife and a number of private wildlife associations employ wildlife conservationists.

NEW ENVIRONMENTAL JOBS: GROWING

Ecologist is a scientist who studies the interrelationship of organisms and their environments and "puts together pieces in our jigsaw puzzle picture of the world." Whether his field of specialization is biology, sociology, public health, economics, regional planning or biostatistics, an ecologist is first and foremost a teacher, instructing others in this new science. As the environmental field widens, ecologists will become more involved in acting as consultants for government and private industry to solve such problems as those associated with thermal effluents from power plants or the release of treated waste water into a bay or river.

Environmental Engineer is basically a sanitary or civil engineer with a background that includes such disciplines as biology, ecology, chemistry, and planning. An environmental engineer might be involved with the design and construction of wastewater treatment plants and solid waste disposal systems or with any air, water or waste pollution control project. His work would involve field sampling and pollutant surveying, data analysis, mathematical modeling, system design and construction.

Environmental Planner may have any one of a number of title designations: regional, park, open-space, land-use or water and land resource planner. But all environmental planners perform the same basic function: they develop plans for future allocation and protection of natural resources. For example, the task of an open-space planner might be to inventory existing recreation lands, evaluate recreation needs and develop programs to meet those needs. A park planner might survey lands for park development, determine its land-use capability and prepare recreation-conservation plans. In short, a planner sets up priorities and then devises ways of achieving these objectives.

owners in the state. Moreover, in the coming years our forests, as a fixed land resource serving growing demands — demands for more wood products, recreation, watershed protection and wildlife enhancement — will have to be more carefully planned and managed for multiple-use if this precious resource, our woodlands, is to be continually renewed and enriched.

Arthur W. Brownell

ANADROMOUS FISH STORY

With heroic perseverance they battle their way upstream, thrashing, flopping and wallowing, their dorsal fins slicing through the water's surface. Anadromous, driven by some biological compulsion, they swim from the ocean upstream to freshwater ponds and lakes where they spawn and then return to the sea. In the spring hundreds of thousands of them swim inland as much as 40 miles. Up the North, Parker, Taunton and Ipswich rivers — and countless other rivers, streams and brooks — they travel in a ritual-like drama to propagate their species. These battling, gray-blue fish — whose weight averages less than a pound; length, about 10.5 inches — are alewives, one of three important native anadromous fish species in the state.

Since the early 17th century alewives — along with shad and smelt, the other major native anadromous fish — have played a crucial role in the state's economy and sport fishery. Big-bellied alewives, flopping up Town Brook in Plymouth to spawn in Billington Sea, were used by the Pilgrims for food and fertilizer. Shad, described by one observer in 1634 as "bigger than the English shads and fatter," ran in such vast multitudes up the Merrimack and Connecticut rivers that they could easily be caught with nets, weir traps, and even spears. And smelt were once so plentiful in Boston's Back Bay that distinguished merchants of lower Beacon Street could be seen early in the morning casting a line into the Charles River from their back doors and hauling in a tasty breakfast snack.

Rapturous accounts by 17th century Englishmen notwithstanding, the horn of plenty of anadromous fish has diminished over the centuries as more people migrated to Massachusetts' shores and more mills and factories were built. Extensive deforestation, to make way for this growth and influx, cut down water flows and made some streams unnavigable for spawning fish. Permanent damage resulted from the draining of alewife spawning ponds for water supplies. Most devastating though was the construction of dams that prevented alewives and shad from passing to their natural spawning grounds.

Today the shad population in Massachusetts is small and restricted principally to the Connecticut, Palmer and North rivers. Alewives and smelt have fared somewhat better, although their numbers, too, are a pale shadow of the past.

Concern with the plight of anadromous fish grows as the species decline. For they are far more than just challenging sport fish for anglers or delectable varieties for the pallet. Anadromous fish are a vital link in the food chain. Anything that affects them affects the ecosystem.

Alewives, for example, which feed on plankton throughout most of their life cycle, as they ascend freshwater streams serve as food for seagulls, raccoon, weasels and other animals. After the alewives spawn in freshwater ponds and lakes, processions of ravenous white and yellow perch, suckers and minnows move in to devour the ripe eggs. As young alewives mature, they became forage food for larger freshwater fish such as perch, bass and pickerel. When they descend to the sea in September, bluefish, pollock and striped bass await to devour them at the mouths of coastal rivers. What remains in the chain of life is for man, the ultimate predator, to catch and eat the bluefish, pollock and striper.

The coho salmon: *new fighting species for the Massachusetts sportsman*

Massachusetts operates several programs to protect and enhance anadromous fisheries. The Bureau of Sport Fisheries in the Division of Marine Fisheries improves anadromous fish habitats by cleaning out streams and regulating water flows. The Bureau also manages a statewide fishway construction program. (Fishways or fish ladders are steps or gradations that enable alewives to bypass dams and continue upstream to spawn.) In addition the Bureau supervises several projects to aid in propagating anadromous species. Ponds and lakes are stocked with adult alewives to establish new runs or build up depleted ones. Shad are taken from the Connecticut River, their eggs stripped, fertilized and transplanted in the Taunton River and in the Charles River above the South Natick dam. Smelt eggs are collected from natural populations and planted in other streams to establish populations of these important food fish.

The most ambitious anadromous fish project is a three-year experimental program involving coho salmon. Late in 1969 the Division of Marine Fisheries purchased 100,000 eyed coho eggs from the state of Washington. With the cooperation of the Izaak Walton League these eggs were hatched at the Berkshire Fish Hatchery and reared at the Division of Fisheries and Game's hatchery in Palmer. In the spring of 1971 about 70,000 surviving smolt (young salmon) were released into the Indianhead River, a tributary of the North River. Last fall large adult salmon returned to the river to spawn, offering an encouraging sign that the coho salmon might adapt to Massachusetts waters and bring to the state a new exciting fishery for sportsmen and an improved aquatic ecosystem as well.

SEE HOW THEY RUN

Recommended Alewife (Herring) Runs
for Public Viewing
VIEWING PERIOD: Late March through June

Town	Stream	Access
Barnstable	Marstons Mills River	access at Rte. 149 and Rte. 28
Bourne	Monument River	access east of Rte. 6
Brewster	Stoney Brook	access at Stoney Brook Road
Harwich	Herring River	access at Bell Neck Rd., Rte. 124 and North Rd.
Ipswich	Egypt River	access at Rte. 1A
Kingston	Jones River	access at Elm St.
Mashpee	Mashpee River	access at Rte. 130
Mattapoisett	Mattapoisett River	access at Rte. 6
Middleboro	Nemasket River	access at Wareham St. and Oliver Mills Park
Plymouth	Town Brook	access at park off Sandwich St.
Sandwich	Mill Creek	access at Rte. 130
Wareham	Agawam River	access at Rte. 6-28

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cipal treasuries are hard pressed and public officials are beset by housing, public transportation and education crises. In this bind money is more likely to be allocated to these areas than to recycling programs.

Nonetheless, Wellesley and Williamstown—as well as other communities such as Marblehead, Needham and Haverhill—have shown that recycling can play a significant environmental role. While ordinarily recycling does not turn a profit for a town, it can reduce the cost of trash disposal and alleviate the drain on natural resources. Most important, community recycling efforts have made people aware of the enormous solid waste problem and sensitive to the urgency of their personal commitment to its solution.

In the meantime, until more sophisticated recycling systems are developed, people will have to make do with the present state of the art. Whether one thinks the community recycling effort represents more charade than substance, it is for now, as the man says, "the only show in town."

BEYOND COMMUNITY RECYCLING

As our solid wastes pile up and up, many state, federal, municipal and private agencies are seeking ways — political, economic and technological — to solve the problem. Although new approaches will supersede community recycling efforts, the concept of resource recovery (recycling) will continue to be an integral part of any new solid-waste management system. In Massachusetts two major experiments to resolve the solid waste dilemma are now being considered. One is already under way; the other is still on the drawing board.

The City of Lowell, with considerable assistance from the federal government, is constructing the nation's first full-scale operational plant to recover minerals and metals by recycling residue from its incinerator. The plant will cost $3.2 million, of which $2.4 million, or 75 percent of the cost, will be funded by the U.S. Environmental Protection Agency.

Utilizing the residue from Lowell's present incinerator, the new facility will employ mineral separation to reclaim 95 percent of the residue. A process of crushing, screening, density and magnetic separation and froth flotation will be used to separate and sort what once was metal waste into aluminum, zinc, copper, iron, glass and sand. Officials expect that revenues received from the sale of these recoverable materials will run about $500,000 annually, enough to cover plant operation costs. Functioning in combination with other incinerators in the area, the new facility promises to radically reduce the amount of land used for solid waste disposal.

On the state level several agencies — including the Departments of Natural Resources, Public Works, Public Health and Community Affairs — are working on a state-wide solid waste management plan. The hub of the plan is regional organization. Throughout the state, towns and cities would be organized into districts or regions. Each region would have processing and disposal centers that would incorporate any number of processing methods, such as incineration, recovery separation or compaction. Regionalization would get communities out of the diposal business, eliminate obnoxious dumps, and provide sufficient volumes of recoverable materials to justify advanced recycling methods. Currently only large metropolitan areas can generate enough solid waste to warrant the expenditure for a modern, automated recovery system.

In addition regionalization would enable other economies of scale in administration, equipment handling and operations. It would also make possible the introduction of innovative systems of resource recovery. One such system now being proposed in the Lynn-Saugus area will recover energy from solid waste by using the heat of incineration to generate steam for power. The system will have the side benefit of helping to conserve resources by using solid waste instead of conventional fuel.

Commissioner's Corner

OUT OF THE WOODS

Although Massachusetts is a highly urbanized state, paradoxically 65 percent of the land, or about 3.2 million acres out of the Commonwealth's total of 5 million acres, is covered by forests. Nearly 90 percent of these forest lands are held by 30,000 private owners, the vast majority of them holding from three to 100 acres.

Over the last 20 years, however, profound changes have taken place in land ownership. Previously forests were largely owned by farmers and rural dwellers, people who lived on the land and worked it for sustenance. At an ever increasing rate though, the trend has been toward absentee landowners, people who own the forests but live elsewhere.

These owners, a large number of whom are out-of-staters, have purchased land for such diverse purposes as pride in ownership, second homes or financial investments. (The last concern is supported to some extent by the fact that forest lands in the state change ownership on the average of every seven years.) Living in an urban environment this new urban breed is cut off from the land and, unlike agrarian man, lacks the necessary information about forests and the need for managing them.

Swelling the ranks of this new urban breed are local conservation commissions that, in effect, are now in the business of forest ownership. Conservation commissions, having acquired forest lands for conservation and preservation, must manage these lands. Yet, with a few exceptions, they lack the expertise to do so. Reenforcing this lack of expertise is a "hands-off attitude," in some cases an article of faith, as conservationists, reacting against excessive development in recent years, have tended to follow a laissez-faire course of not tampering with nature.

Such a laissez-faire approach can be almost as harmful as overdevelopment. For a forest is like a garden: if it isn't weeded, cultivated and cared for, it will become unproductive and unsightly. An unattended forest deteriorates rapidly, becomes vulnerable to fire, insects and disease, and loses its attraction as a habitat for wildlife and an aesthetic vitalizer for man.

Even less understood by the majority of the new urban breed of forest owners is the importance of wise forest management to the forest industry in Massachusetts — something that farmers and rural owners have known for generations. More than 75 million board feet of timber was harvested from Massachusetts forests last year and the value of all wood products manufactured totaled over $355 million. Products from Massachusetts softwood trees, such as white pine and hemlock, included building lumber and cabinets. From hardwoods like oak and maple came flooring, furniture and, of all things, bowling alleys. In fact, the demand for high-quality maple soared and the price doubled last year when Japanese buyers, triggered by the bowling craze sweeping Japan, poured into Massachusetts in search of maple wood to build bowling alleys.

The commercial harvesting of timber is something many forest owners, large and small, can take advantage of. Throughout the state the Department of Natural Resources has foresters ready to assist, at no cost, forest owners and conservation commissions needing expert forestry advice. Last year, for example, one of DNR's foresters, with the assistance of the U.S. Forest Service's Cooperative Forest Management Program, helped the town of Groton earn $3700 from the sale of old-growth timber harvested in the town forest. The harvested timber consisted primarily of trees that were becoming overmature. They had to be cut to sustain and perpetuate a healthy, vigorously growing forest. All told, DNR foresters last year assisted some 3000 forest owners in weeding, thinning, pruning, harvesting and marketing their forest land crops, pointing out not only the commercial value of the land but its recreational and aesthetic value as well.

Also aiding forest owners in Massachusetts are tax incentives. Chapter 61 of the Massachusetts General Laws (revised in 1969 by Chapter 873) allows forest land to be valued at no more than $10 per acre if the owner of 10 or more acres (valued at not over $400 per acre at the time of application) practises forest management to improve the quantity and quality of a continuing forest crop. In short, tax incentives, coupled with sound forest management and timber harvesting, help provide — and could help provide many more — forest owners with a feasible alternative to selling off their land to developers.

Although foresters have come out of the woods to assist with urban needs, their services will have to be expanded and improved. The number of landowners receiving forest management assistance from state service foresters, as well as private forestry consultants, is still only a small percentage of the total forest

COMMUNITY RECYCLING: THE ONLY SHOW IN TOWN

Although only in their infancy, community recycling programs have been under heavy fire from the beginning. Many solid waste experts view community recycling efforts as a mere drop in the bucket, capable of recovering only a fraction of the wastes for reuse. Businessmen claim recycling programs do not pay their way and collection groups have to rely on undependable subsidies, donations and volunteers to make their programs work. Cynics everywhere deride the programs as charades for public involvement, busywork for bored housewives, or one-shot crusades for the Boy Scouts.

Much of the criticism seems to be justified. Trash in Massachusetts continues to pile up, with no relief in sight. In the Commonwealth 7.5 million tons of solid wastes are generated annually, equivalent to 7 pounds per person per day. By 1975 wastes will be 8.7 million tons annually. Financial returns on recycled materials often show up in the red as markets for used bottles, cans and paper remain undeveloped and incentives continue to be negligible. In terms of railroad freight costs, for instance, it costs more to ship scrap than virgin products.

In many communities—Barnstable, Salem and Peabody just to mention a few—recycling programs have failed. A project in Boston never got off the ground and Cambridge's fledgling paper collection is floundering. Even in an affluent suburb like Weston, the once smoothly managed program is reportedly in danger of faltering. And scores of communities across the state are just going through the motions of recycling, making little dent in reducing the mounting heaps of trash.

Yet despite the prevailing pessimistic prospects for success, local programs continue to start up. Recently recycling projects were launched in Brookline, Ipswich, Boxford and Weymouth. And an undaunted group in Peabody, though it failed once, is having another go at collecting material for recycling.

What explanation can be given for the pervasive interest in recycling? In large part it is attributable to a few modest success stories, such as those in Wellesley and Williamstown.

Wellesley, an affluent suburb (median income: $19,400) of 28,000 residents, is located about 16 miles west of Boston. Two years ago, realizing that the town's landfill for solid waste was rapidly diminishing, a group of Wellesley women, calling themselves Action for Ecology, set up a recycling program. Led by Martha Stone, a Wellesley housewife, the group persuaded the town to appropriate $15,000 to pay for the rental of collection bins and a full-time recycling monitor. A monitor was essential to reduce vandalism at the collection site and to reject unusable items such as blankets, broken flowerpots and shoes.

Since Wellesley has no municipal trash collection, a great many households haul their own rubbish to the town dump. It was, therefore, not an insurmountable problem to enlist a significant number of people (now nearly 45 percent of the households) to sort out their own paper, cardboard, glass, cans and plastics for deposit in separate bins.

From the dump glass bottles are hauled by a local trucker to the Glass Container Corporation in Dayville, Connecticut; paper is transported by P. Shaffer & Company to its reclamation center in Chelsea; cans are taken by a metal salvage company to its operation site in Tewksbury; and discarded plastic material is transferred by the Wellesley DPW to Mann Products Company in Framingham for use in the manufacture of patio blocks and bellbars.

Last year Wellesley recovered over 1000 tons of materials, mostly paper and glass, but also considerable amounts of cans, cardboard, plastics and milk cartons. Income generated from selling materials for recycling came to about $8100. While the town did not make money, sales of materials cut the $15,000 appropriation more than one half. And this year Martha Stone estimates that income from recyclables, plus savings from reducing incineration (it costs Wellesley $12 a ton to burn trash in its incinerator), will more than cover costs.

In the northwestern part of the state another success story is represented by Williamstown, a college community of 8400 residents. Here the approach to recycling is regional rather than purely local. About a year ago several communities in southern Vermont and the Berkshires—including Williamstown, Lenox, North Adams and Pittsfield—formed the Berkshire-Bennington Counties Recycling Committee (BBCRC). The most successful community involved in this regional recycling effort is Williamstown.

Like Wellesley, Williamstown is running out of available landfill area for its solid waste. Unlike Wellesley's recycling program though, Williamstown's recycling operation doesn't cost the community anything to run. The residents sort out their bottles, cans and paper and haul them to the dump or to collection centers. There a jobber, who also services the other communities in the BBCRC, assumes all the expenses of maintaining the collection sites and transporting recoverable materials to recycling centers. This can be pretty expensive because glass has to be hauled to Dayville, Connecticut; paper to mills in New York and Vermont; and cans across the state to Continental Can Co. in Malden.

But with improving economies of scale, as the recoverable tonnage from communities in the BBCRC grows, the jobber is moving toward the break-even point and expects to turn a profit within the year. In Williamstown the rate of diminishing landfill areas has been slowed. According to Michael Shay, Williamstown environmentalist and BBCRC organizer, the recovery of reusable materials has reduced solid waste volume 25 percent, thus extending the life of the newly acquired landfill site at least five years.

What has made Wellesley and Williamstown's recycling programs tick? A cohesive group to spearhead the program and individual leaders like Wellesley's Martha Stone and BBCRC's Michael Shay.

As Nancy Bellows, resource expert with Resource Planning Associates, an environmental consulting firm in Cambridge, puts it: "You must have a person not casually devoting his time to recycling but dedicated to convincing the local DPW that a recycling program will alleviate the solid waste crisis. This person must also be able to convince public officials that a recycling program will result in a cost saving to the community; to enlist the media's support in educating the public to the solid waste problem; and to appeal to the people directly to pitch in."

Unfortunately the encouraging case histories provided by Wellesley anud Williamstown are not typical of most other communities in the state. For one thing, both towns have a built-in achievement factor working for them. Neither community offers municipal trash collection. Since a good portion of the population have to haul their trash to collection centers or the local dump anyway, it is not too much of a chore for residents to go one step further and sort out their wastes.

Then, too, there is an affluence factor which is especially relevant to Wellesley. That town can readily afford the leadership and seed money to set up and manage a recycling program. But in cities and poorer suburbs muni-

SHORT SUBJECTS

BRUINS COUNTRY

Attendance at DNR-operated skating rinks soared again last year, up 25 percent over 1971, as more than 2 million skaters passed through the turnstiles. The number should climb even higher this year as new rinks go into operation in Plymouth, Fall River, Franklin, Newburyport and Lowell, bringing the total number of DNR rinks to sixteen. Highest attendances were recorded at rinks in Brockton, Peabody, Springfield and Worcester, where each rink was packing in from 150,000 to 200,000 skaters a year.

So great is the demand for icetime across the Commonwealth that many rinks operate up to 20 hours a day, nine months of the year. Rinks in Peabody, Greenfield and North Adams are even running hockey and figure skating clinics in the summer months. What makes this skating phenomenon such a blessing is that the operation of these rinks doesn't cost the taxpayer a cent. Once the rinks are built, the heavy user-demand virtually guarantees their operating in the black. This great urge to skate and play hockey comes as no surprise though. After all, Massachusetts is Bruins Country — pardon, Whalers and Braves Country too.

TRUTH OR CONSEQUENCES

Under way this winter in Massachusetts is the first study in the nation to measure the environmental consequences of ocean dredging. Called the New England Offshore Mining and Environmental Study, the $5 million NOMES project is sponsored by the Massachusetts Department of Natural Resources, the National Oceanic and Atmospheric Administration, and several other government and private organizations such as the Environmental Protection Agency, MIT and Raytheon Company. As part of NOMES, dredging operations will begin in the summer of 1974 about 11 miles east of Boston. Before, during and for two years after the dredging, the area will be scientifically monitored to determine the effects of dredging on plankton, algae, shellfish and finfish.

The NOMES project comes on the heels of another study conducted by DNR's Division of Mineral Resources and Raytheon to determine sand and gravel deposits in Massachusetts waters. The survey reported that more than 300 million cubic yards of potentially exploitable sand and gravel deposits lie just a few miles off the Massachusetts coast. With the price of sand and gravel (used in building and road construction) rising and supplies diminishing, the ocean might provide a bountiful source. But until the NOMES project is completed and the "extent of and risk of harm to marine and other natural resources" is measured, a moratorium on all commercial dredging operations in Massachusetts waters remains in effect.

FOUR MILLION TREES IN A DECADE

More than 4 million trees will have been planted in this decade under an unsung program sponsored by the Commonwealth's conservation districts. Funded by DNR, conservation districts provide land-use information and assistance to conservation commissions, town planning boards, municipal and county agencies, and individual landowners. Every spring a number of conservation districts offer for sale evergreen seedlings such as white, red or Scotch pine; Norway, white or blue spruce; hemlock; arborvitae and Douglas fir. Also for sale are autumn olive, dogwood, red mulberry and mountain ash. When properly cared for these trees grow into beautiful specimens, providing such functional uses as windbreaks, sound buffers, and wildlife food and cover.

Over the past ten years the Barnstable Conservation District has sold more than 493,000 seedlings. Last year all the districts in the program sold over 360,000 seedlings. At the rate the program is growing more than 4 million trees will be planted by 1980. Buyers include conservation commissions, forestry departments, Boy Scout groups, corporations, nurseries and individuals. Profits from tree sales are used by conservation districts to administer the tree program, defray other operating costs and, with leftover stock, promote conservation. The Essex Conservation District, for example, donated trees to a local conservation commission to help restore an abandoned gravel pit and also contributed trees to the Trustees of Reservations and the town of Ipswich for sand dune restoration. (For further information on district tree sales, contact your conservation district office.)

THE WATER SLEUTHS

THROUGHOUT THE STATE REGIONAL TEAMS OF EXPERTS, UNDER THE DIVISION OF WATER POLLUTION CONTROL, INVESTIGATE COMPLAINTS OF WATER POLLUTION, SUPERVISE PROGRESS ON POLLUTION ABATEMENT PROJECTS, SURVEY WASTEWATER TREATMENT PLANTS TO PROVIDE DATA ON OPERATING EFFICIENCY, AND CONDUCT OPERATOR TRAINING COURSES. CITIZENS WISHING TO LODGE A COMPLAINT ABOUT SOME WATER POLLUTION MATTER, OR DESIRING WATER POLLUTION INFORMATION, SHOULD CONTACT REGIONAL ENGINEERS AT THE FOLLOWING LOCATIONS:

METROPOLITAN REGION: REGIONAL ENGINEER SABIN LORD, BOSTON (TEL: 727-3855) — COVERS BOSTON HARBOR AND THE LOWER CHARLES, MYSTIC AND NEPONSET RIVER BASINS.

NORTHEAST REGION: REGIONAL ENGINEER DONALD POTTLE, LOWELL (TEL: 459-7193) — COVERS BLACKSTONE, MERRIMACK, UPPER MYSTIC, PARKER AND IPSWICH RIVER BASINS AS WELL AS NORTH SHORE COASTAL AREA.

SOUTHEAST REGION: REGIONAL ENGINEER WILLIAM MARHOFFER, NORTH PEMBROKE (TEL: 826-2424) — COVERS THE UPPER CHARLES, TEN MILE, UPPER NEPONSET AND TAUNTON RIVER BASINS AS WELL AS THE SOUTH SHORE COASTAL AREA, INCLUDING CAPE COD AND THE OFFSHORE ISLANDS.

WESTERN REGION: REGIONAL ENGINEER WILLIAM DOUBLEDAY, AMHERST (TEL: 413-549-1755) — COVERS THE HOOSIC, HOUSATONIC, CONNECTICUT, FRENCH AND QUINEBAUG RIVER BASINS.

DIVISION DIRECTORS

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Thomas C. McMahon	727-3855
WATER RESOURCES	
Charles F. Kennedy	727-3267

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DAVID KALES, Editor
LORRAINE A. AGRI, Graphics Coordinator
ELIZABETH R. HICKS, Associate Editor
JACK WOOLNER, Photographer
JAMES E. HEALEY, Information & Publicity

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ENVIRONMENTAL
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assachusetts Department of Natural Resources Arthur W. Brownell, Commissioner May-June 1973 Number Seven

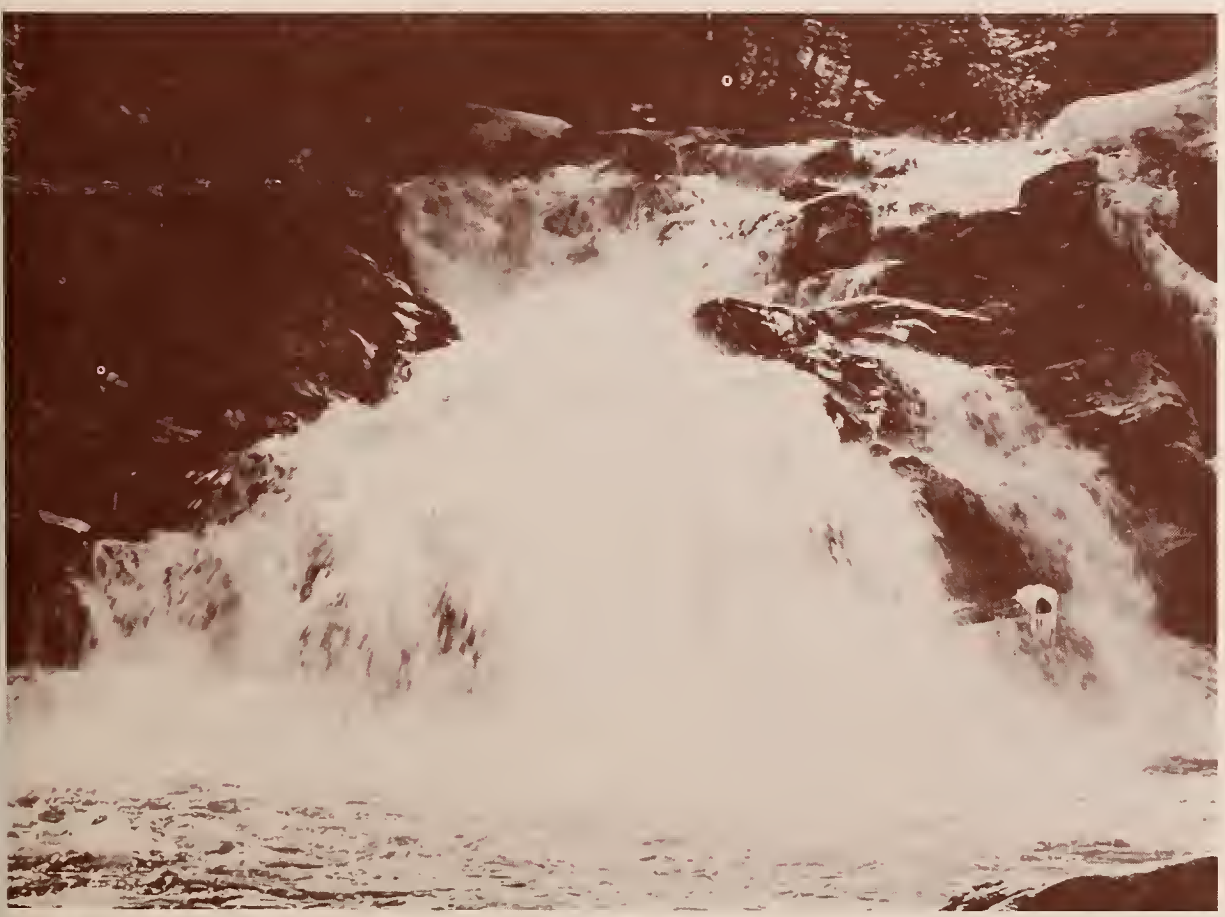
WHAT THE NEW FEDERAL WATER POLLUTION BILL MEANS FOR MASSACHUSETTS

The Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) enacted nothing short of the grandiose goal of eliminating water pollution in America by 1985. In essence, the bill inaugurates a two-phase program for cleaning up rivers: making them clean enough for swimming in a decade, and then eliminating water pollution altogether by 1985. To achieve this goal the bill calls for the federal government to spend $24.6 billion over the next decade; $5 billion of this funding has already been earmarked by Washington in fiscal 1973 and 1974 for the construction of municipal wastewater treatment plants. The following account, written in conjunction with the Massachusetts Division of Water Pollution Control, indicates the impact the new federal water bill will have on the Commonwealth.

For towns and cities across the state the new law requires that municipal wastewater treatment plants include facilities for the secondary treatment of sewage. (See Primer on Wastewater Treatment.) All treatment facilities must be in operation by mid-1977. By mid-1983 municipal wastewater plants will be required to use advanced treatment, including, if practicable, the reclaiming and recycling of waste water.

Municipalities and water pollution control districts must obtain a permit from the state Division of Water Pollution Control to discharge waste water; if the state agency fails in qualifying to administer the program, the U.S. Environmental Protection Agency will take charge of it. Permits will require construction and operation of treatment facilities to meet the 1977 and 1983 requirements. (The deadline for municipal permit applications was April 1973.) Penalties for failing to meet the various water pollution abatement deadlines are stiff — running as high as $50,000 per day and two years in jail.

Under the new bill municipalities will receive a 75 percent federal grant for the construction costs of treatment plants. With Massachusetts planning to amend the state water pollution law to add an additional 15 percent, total federal-state grants for constructing plants should run 90 percent of the costs. (Under the old federal water pollution law, federal-state grants paid communities up to 80 percent of construction costs.)



Massachusetts' rivers and streams: *will they be clean in a decade?*

Despite this combined 90 percent grant, many communities will undoubtedly feel the 10 percent capital outlay another pinch on their hard-pressed treasuries. What's more, the cost of operation and maintenance of a modern wastewater treatment plant involves additional local financial burdens. For example, Springfield's planned $48 million wastewater treatment plant will cost $1.4 million a year to operate and maintain — although a significant part of this cost will be borne by private companies that tie into the municipal system.

Industry, too, will feel the effects of this tough, new water pollution bill — both in terms of administrative red tape and the pocketbook. Industries, like municipalities, are required to obtain permits from Water Pollution Control or the EPA (if the state agency does not run the permit program) to discharge waste water. To comply with the conditions of the permits industries will have to construct and operate facilities to treat waste water before discharging it into waterways. Penalties for failing to conform to the law are similar to those imposed on municipalities — ranging as high as $50,000 per day and two years in jail.

By mid-1977 every industry, using the "best practicable pollution control technology," must meet certain effluent limitations. Effluent limitations are the levels to which specific pollutants must be reduced for discharge into waterways. By mid-1983 industries will have to meet even stricter effluent limitations through the use of the "best available technology." (Just what phrases such as "best practicable" and "best available technology" mean are points of considerable debate and confusion among experts now.)

EPA will establish general guidelines for effluent limitations on an industry-by-industry basis; limitations will be assigned to pulp and paper manufacturing, petroleum refining, iron and steel manufacturing, food processing, etc. But specific pollution controls to meet effluent limitations will be determined locally by state and EPA experts on a plant-by-plant basis.

While a lot of head-scratching over interpreting the new law is going on now, one thing seems certain: the treatment systems that industry must build to meet the 1977 effluent limitations will cost money. And the overwhelming odds are for the ante to be raised as industries have to install advanced treatment facilities to meet the stricter 1983 limitations.

Companies choosing to tie in with municipal treatment facilities rather than build their own separate plants will not escape the new costs either. Previously companies that tied into municipal sewerage and treatment systems worked out their own arrangements with the community, usually paying only a share of operating and maintenance costs. Now, under the new law, companies are required to pay a proportional share of the federally assisted capital costs.

For example, a company accounting for 50 percent of the effluent load on a $20 million municipal treatment facility would now have to pay about $7.5 million for its share in constructing the plant. When one adds to this expense the requirements for pretreating wastes before discharge to municipal plants and the industry's share of operation and maintenance costs, it is obvious that costs of water pollution abatement will become a major expense item on the corporate balance sheets in the coming years.

For marginal industries the stringent new effluent limitations could make things really rough going, although some relief may be in sight. Presently the state is working on legislation providing low-interest loans to companies constructing pollution abatement facilities. But even if this assistance comes about, companies must now assess whether it will be costlier to tie in with municipal systems or go it alone. Either way means higher costs for industry; and for some, specifically among the small paper and tannery companies, these new water pollution abatement costs might mean their closing down. (See story: Survival of the Fittest.)

PROS AND CONS

The new federal water pollution law is viewed with both optimism and skepticism. Water Pollution Control officials believe the new bill makes enforcement easier. Under the old law it was difficult to determine who was polluting. To pinpoint a suspected source of pollution, water quality sampling had to be taken above, at and below the questionable area. Now with every industrial and municipal source of water pollution required to meet certain standards, it is easier for Water Pollution Control to monitor the pollution source because any effluent level exceeding effluent limitations can be readily detected. In addition, the new law gives the state agency more control over the planning, construction and maintenance of treatment plants.

As to federal funding for Massachusetts under the new law: "It isn't enough to accomplish the goals of the law," says Thomas McMahon, Director of the state Division of Water Pollution Control, "but it is much more than what we were entitled to before." In the program's first two fiscal years Massachusetts is slated to receive $187 million for construction of wastewater treatment projects, up from $52 million last year under the old bill. The Division feels that this allotment, supplemented with money from two state bond issues totaling $400 million to fund construction of wastewater treatment plants, should be sufficient in the early stages to keep the program moving ahead in the state.

The bill's most praiseworthy aspect, Water Pollution Control officials believe, is its goals. The law establishes a national committment to achieve by 1983 water that is clean enough for swimming and other recreational uses, and clean enough for the protection and propagation of fish and wildlife; and by 1985 all discharges of pollutants from the nation's waters should be eliminated.

The bill, however, has several serious shortcomings. For one thing, it has triggered an avalanche of red tape that threatens to bury and delay the program at its outset. In many places the language of the bill, like "best practicable," "best available technology," is imprecise and undefined, confounding lawmakers and engineers alike. Worse still, a Pandora's box of coordinating problems involving federal, state and local governments and industry has been opened up. Deadlines set down, for instance, are totally unrealistic. EPA chief William Ruckelshaus admitted recently that even with full funding 60% of the nation's municipal treatment plants would not be in operation in time to meet the 1977 deadlines.

Where the new law really evokes skepticism among Water Pollution officials is in its treatment of other major sources of pollution besides municipal and industrial. In Massachusetts many of the urban areas such as Boston, Cambridge, Lowell, Lawrence, Fall River and Springfield have combined sanitary and storm sewers. Whenever flows exceed the capacities of a sewer system — which happens frequently in heavy rainfalls — the storm water, along with the raw sewage, overflows through conduits into the river before ever reaching treatment plants. The bill provides no funds for tackling this staggering problem.

Nor does the bill offer much help in solving the so-called nonpoint sources of pollution. Runoffs from city streets, oil spills, agricultural activities, construction, mining, septic tank discharges, even natural pollution from soil, rocks and vegetation do not usually discharge through a pipe that can be conveniently monitored. Rather, these kinds of pollution seep into surface waters and gradually raise the level of contamination throughout the whole watershed.

No one is certain just how much pollution comes from these nonpoint and combined sewer system sources. And no one can be sure of their full contribution until the effects on a river of municipal and industrial treatment plants can be measured. But all these other potential sources of pollution, especially those from the combined sewer overflows, raise the hard question of whether all the treatment plants in the world would be enough to clean up our rivers.

Ultimately the true test of the bill's effectiveness is whether our water will be cleaned up. None of the experts expect pollution abatement and elimination to take place by the dates specified in the bill. And only dreamers believe every river and stream will become suitable enough for swimming and fishing. Far into the future portions of the Connecticut, Taunton, Charles, Nashua and Merrimack rivers — where these rivers pass through urban areas — will continue to be polluted after rainfalls as long as the combined sewer overflow problem remains unsolved.

Nevertheless, as Director McMahon believes, most Massachusetts rivers will be pretty clean within the decade — a monumental achievement that gained its original impetus through federal and state legislation in the late 1960's and through a national committment via the new Federal Water Pollution Control Act Amendments of 1972.

SURVIVAL OF THE FITTEST

To close or not to close down — that is the question facing many small companies affected by the new federal water pollution bill. Many of them, marginal operations to begin with, must decide whether to absorb additional pollution control costs required under the new law and struggle on, or call it quits. One company

cont.

Wastewater treatment plants: *will they be enough to do the cleanup job?*
Photo: Courtesy of Camp Dresser & Mckee

short subjects....

BOSTON HARBOR ISLANDS:
CLEAR SAILING AHEAD

The first phase in developing the Boston Harbor Islands into a unique ocean-based urban park is nearly completed. By late spring DNR will have acquired, either through friendly purchase or eminent domain, 13 privately owned islands. Cost of acquisitions: about $700,000, one half of which is reimbursed to the state by the federal government under the Bureau of Outdoor Recreation's Land and Water Conservation Fund Program. These acquisitions assure that virtually all the Harbor Islands will be safe from private development. From here on out the way will be open to begin desperately needed erosion control on many of the islands.

Among some of the key islands acquired are 16-acre Gallop's Island which has a good sandy beach and a large hill overlooking the entire Harbor; 50-acre Grape Island, located near the mouth of the Weymouth Back River, with several gravel beaches and tidal salt marshes offering recreational and conservation enjoyment; 35-acre Bumpkin Island, a single drumlin off Hull that affords excellent opportunities for camping, hiking and viewing Hingham Bay; and the Brewsters, all of which (with the exception of Great Brewster which is a large drumlin) are small, jagged outcrops of solid bedrock reminiscent of the Maine coast. Acquisition of the Brewsters, the outermost islands of Boston Harbor, assures preservation of both a bird sanctuary and a rare scenic environment.

ANTIPOLLUTION STRIKE FORCE

Enforcement of water pollution laws received a big boost recently with the swearing in of seven law students as deputy natural resource officers. Previously enforcement of the state's water pollution laws had been hampered primarily by a shortage of manpower in DNR and agonizingly slow administrative machinery in other agencies. But under a new student intern program set up between DNR and Suffolk University Law School the number of law enforcers has been increased. "In effect," says Robert Blumberg, Director of the Division of Mineral Resources and the program's coordinator, "a seven-man strike force has been established to act more quickly and efficiently in bringing water pollution violators to task."

The deputy natural resource officers investigate and file complaints on water pollution violations. But what makes the program unique in the state, and perhaps in the nation, is that the law students are empowered to prosecute criminal water pollution cases in the district courts. For their services the student interns receive practical experience and academic credit. The Commonwealth, in turn, obtains at virtually no cost a whole new and eager — and largely untapped — source of manpower. If the program proves successful the number of deputies and the number of participating law schools will be expanded. Also contemplated is the broadening of deputy enforcer duties to include wetlands protection as well as enforcement of water pollution control.

SO YOU WANT TO STUDY THE ENVIRONMENT...

Many colleges and universities offer environmental courses, usually within their biology departments. But with the growing realization of the importance of environmental affairs, an increasing number of schools have developed extensive programs in this field. The following is a sampling of the various kinds of undergraduate environmental programs offered in the state.

Berkshire Community College — Vocationally oriented, Berkshire's Environmental Studies program prepares students for technician jobs in such areas as air, land and water quality control and solid waste management. Courses offered in this two-year program are transferable to state colleges and universities. Besides the standard fare of ecology, air pollution and chemistry courses, the program also offers courses in such exotic endeavors as camping and winter survival. And soon to be offered is on-the-job training for academic credit. A mobile lab trailer, replete with testing equipment and instrumentation and accommodating a class of as many as 20 students, puts Berkshire's environmental show on the road.

Boston College — B.C.'s Environmental Center offers both technical and humanities courses on the environment, with an "Environmental Synthesizing Course" tying both disciplines together in the senior year. The Center offers environmental lectures and workshops and, through a close working relationship with the city of Newton, helps provide an outdoor classroom situation for practical, environmental problem solving.

Hampshire College — The entire college exudes a down-on-the-farm atmosphere and is seemingly run under a philosophy of "practice what you teach." The school has several working farms on campus and is moving toward the goal of providing its own food supply. Work is also under way to build a microbiological sewage treatment facility to reclaim the college's sludge. And the school intends to landscape its hedgerows and forest borders in order to encourage wildlife to move on campus. In short, Hampshire aims to become as closed an ecosystem as possible. An Environmental Quality Program — offering lectures, seminars and research projects — adds formalized structure to the outdoor classroom experience.

Massachusetts Institute of Technology — For the slide-rule and test-tube set MIT offers extensive interdepartmental courses and laboratory research under the direction of the Interdisciplinary Environmental Council. Although no separate degree program in environmental science or engineering is offered, most departments have educational and research opportunities in environmental fields relating to their own disciplines. A few examples of courses offered: Cycles in the Ocean and Atmosphere, Environmental Impact of Nuclear Power, and Environmental Measurements Project Laboratory.

Southeastern Massachusetts University — SMU's Marine Biology and Marine Engineering programs provide an opportunity to "get more than just your feet wet." Both programs offer not only courses ranging from water pollution to larval fish development, but also "wet course work" that can involve scuba diving. Research facilities supporting the programs include a 20-acre waterfront site on nearby Gooseberry Island, special marine labs, and a 65-foot research vessel serving as a floating laboratory.

Springfield College — Geared to students preparing for environmental careers, the college offers a B.A. in Environmental Studies. Depending on their interests, students can take the technically oriented Nature Interpretation Program or the Conservation Program that emphasizes the social sciences. Both programs are designed to prepare students for positions in environmental planning, teaching and administration. Courses are also required in geology, education and psychology, as well as in such specialized areas as aquatic conservation and environmental design. A little frosting on the academic cake: a two-week study tour of New England called "Conservation Caravan."

University of Massachusetts — "Something for everybody," including a B.S. or two-year associate degree in environmental science, would seem to be U. Mass.'s underlying environmental studies motto. The Environmental Technology Program offers courses from other departments in the university, such as forestry and soil management, park administration, wood technology, wildlife management and public health. Other environmental organizations on campus include the Technical Guidance Center for Environmental Quality, the Environmental Quality Executive Council of the College of Agriculture, the Water Resources Research Center, the Committee on Environmental Quality and the popular and growing Institute for Man and His Environment, an interdisciplinary program of courses and research for the undergrad.

Williams College — One of the most extensive college environmental programs in the state is reputed to be Williams' Center for Environmental Studies. The Center incorporates the sciences, social sciences and arts in its approach to environmental study. Courses offered include introductory ecology, economics and planning, and advanced seminars in such subjects as Perspectives on Environmental Analysis and Environmental Planning and Policy. The Center works closely with surrounding communities in dealing with such environmental problems as solid waste disposal and recycling.

Worcester Polytechnic Institute — WPI has introduced into its curricula environmental engineering, which is essentially a merging of civil engineering and biological sciences. WPI's Environmental Systems Study Program does not grant a degree though. Under the program students may concentrate in interdisciplinary environmental courses such as aquatic biology, thermal pollution, stream ecology and systems analyses. The program is designed to encourage students to work on interdisciplinary teams and on real engineering problems.

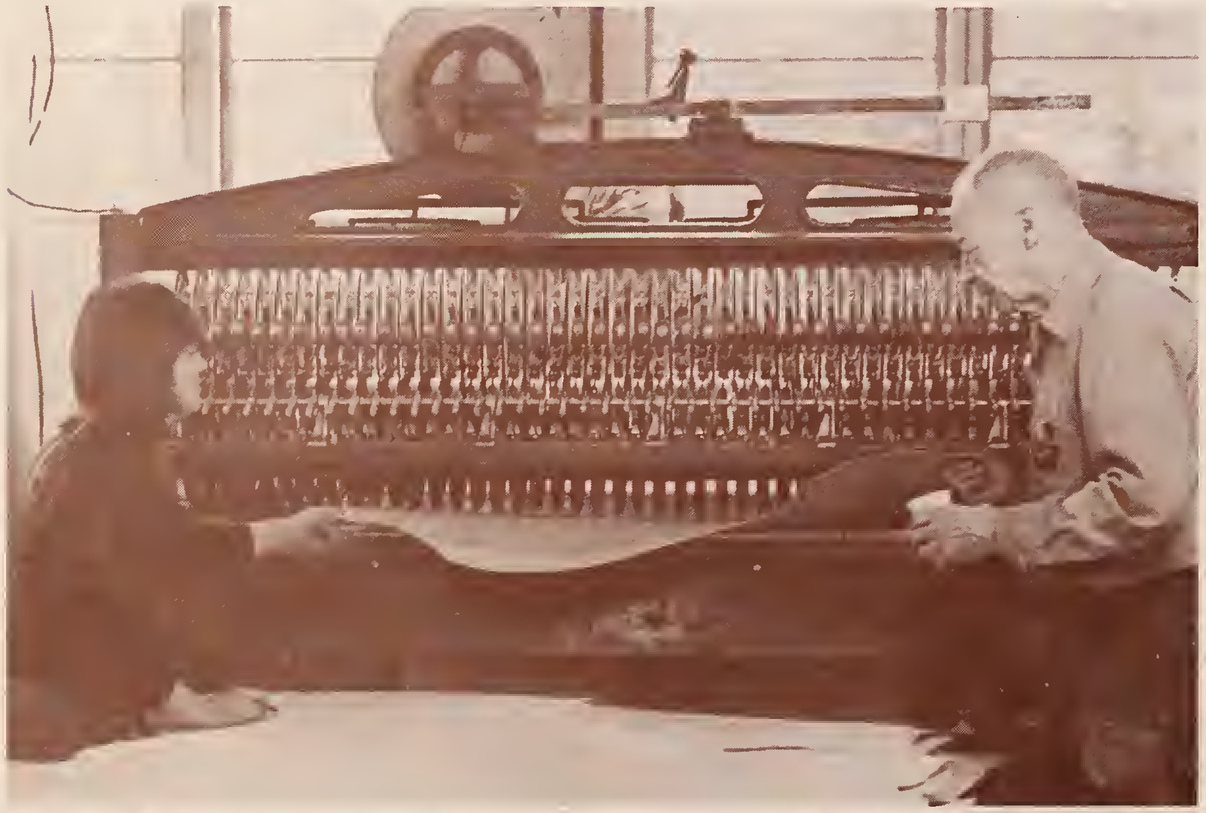
in this predicament is R.J. Widen, a small tannery in North Adams, Massachusetts that processes leather for belts and handbags.

Widen Company has been trying to solve its pollution problem for years. The company had to, for as a tannery it was dumping large amounts of chemicals and organic materials from hides and hairs into the Hoosic River. About a year ago Widen began construction of a $100,000 pretreatment facility. And it had just signed a contract to pay another $95,000 as its share in constructing a joint wastewater treatment plant when the new federal water pollution bill went into force. All of a sudden, under the requirements of the new bill, Widen's share of the costs for water pollution abatement ballooned to $325,000 (in addition to the pretreatment costs). The new costs now threaten to push Widen into the red and loom as the financial straw that could break the company's back.

Widen's shutdown would be felt beyond its own doors. For the little city of North Adams — population 19,000 — the company's demise would be another blow to the community's depressed economy. Besides taxes paid to the town, Widen pumps more than $1 million annually, in terms of payroll and local purchases, into the regional economy.

The greatest toll though would be human — the livelihood of Widen's 100 employees. Some of them could find new jobs, but many who are older or whose only skills are those acquired through long years of service to the company would have trouble finding employment elsewhere. Confused and uncertain as to their fate, the workers wonder why they have been singled out as victims of environmental progress. Exclaimed one employee: "It took 100 years to dirty up the waters. It's going to take more than closing down Widen to clean them up again."

As the situation stands now Widen management thinks the company will survive, but as Warner L. Smith, the company's Vice President puts it, "at a tremendous sacrifice in the ways the company does business." Widen's plan is to buy pretreated hides, instead of treating its own from the beginning. This procedure would eliminate the first stage in leather processing which accounts for 70 percent of the pollution. This changeover would, in turn, cut down the company's effluent load and reduce its share of the costs of constructing a new treatment plant from $325,000 to $125,000 — hopefully enough of a cost reduction to keep operations in the black. "The plan is a calculated financial and economic risk," says Smith. "But it's our only alternative to closing down."



The greatest toll would be human

Photo: Courtesy Habitat Project, Channel 57

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Story idea and material for this article were made possible through the Habitat Project Environmental Reporting Team of TV 57, the public television station of western Massachusetts. For information about the Habitat Project, contact Beth Curley: (413) 781-2801.

COMMISSIONER'S CORNER:

THE LONG, LONG ROAD

In 1915 the Commonwealth purchased 1800 acres of land in the town of Winchendon in north central Massachusetts. Later named Otter River State Forest, this acquisition marked the beginning of our state forest and park system. Today the state owns 87 forests and parks comprising over 280,000 acres. But times have changed. Where it cost only about $4.50 an acre for the Winchendon land, the average cost of purchasing recreational land currently runs $1500 an acre.

While our Department will continue its land acquisition program, in the face of the burgeoning cost of land we are placing special emphasis on modernizing, upgrading and expanding facilities at existing sites. Indeed there is plenty of room for improvements. Presently many forest and park areas have limited campsite space, antiquated sanitary and water systems, and roads and dams that need to be repaired or constructed. In several parks, trails for hiking, biking or snowmobiling are simply nonexistent. The Department has, however, undertaken a major park renovation and improvement program to upgrade these conditions.

First of all, we have completed construction of visitor centers at Mt. Greylock State Reservation in Adams, Wachusett Mountain State Reservation in Princeton, and the new Wompatuck State Park in Hingham, only 17 miles from Boston. These centers, which will house educational facilities, are concrete evidence of the Department's concern with providing environmental education and nature interpretation for the public.

Also under way is a campsite construction program to narrow the gap between supply and demand for outdoor recreation and camping facilities. By early 1974 DNR will have completed construction of 950 campsites, bringing the total of state-operated sites to 2500, an increase of more than one-third over camping facilities provided in 1971.

This summer 100 new campsites will be opened at Horseneck Beach in Westport, where no campsites existed before. In the Charge Pond section of Myles Standish State Forest in Plymouth, 250 new campsites will be ready, more than doubling former camping facilities. Wompatuck's opening this summer will not only provide 400 campsites, but also excellent opportunities for hiking, bike riding and nature study. Planned for completion later in the year are 100 campsites at Scusset Beach State Reservation in Bourne and 100 sites at Lake Dennison State Park in Winchendon.

Contrary to the popular impression that campers like to rough it, DNR studies show that most people using state facilities prefer all the amenities — flush toilets, hot showers, electricity, telephones and trailer waste stations. We have therefore embarked on a major program of constructing sanitary facilities and water systems. Shower houses and trailer waste stations have been built at Nickerson State Park in Brewster, Salisbury Beach State Reservation in Salisbury, and Shawme-Crowell State Forest in Sandwich. In the planning stage are new comfort stations and water and sewage systems at the D.A.R. State Forest in Goshen and Harold Parker State Forest in North Reading.

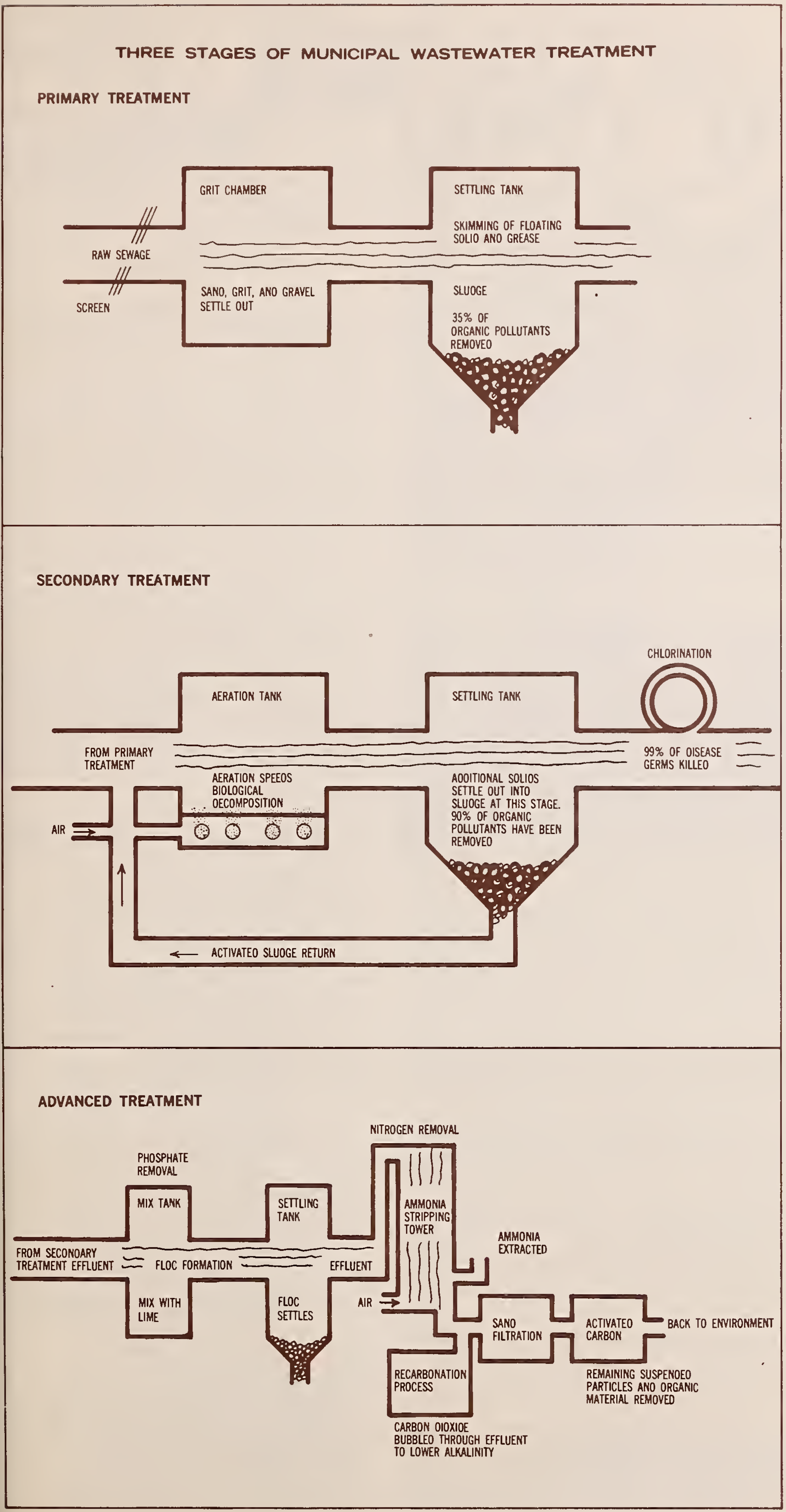
Dam construction is another major program. Some DNR parks and forests lack sufficient water to support recreational activities like swimming, boating and fishing. Consequently DNR has turned to dam construction to create artificial impoundments or to achieve better control of water elevations at existing ponds and lakes.

Currently under construction at Massasoit State Park in Taunton (project completion date: fall 1973) is a dam that will create a 250-acre impoundment called Lake Rico. This $900,000 project, half of which will be reimbursed to DNR by federal funds from the Bureau of Outdoor Recreation's Land and Water Conservation Fund, will make Massasoit a first-rate day-use park. Included in the project will be a beach that can accommodate 2000 people and a fish ladder that can handle an alewife run of at least 100,000. Lake Rico will provide excellent opportunities for swimming, boating and fishing for pickerel, bass and perch.

Another dam-related project is taking place at Moore Memorial State Park in Paxton. This

cont.

A PRIMER ON WASTEWATER TREATMENT


THREE STAGES OF MUNICIPAL WASTEWATER TREATMENT
PRIMARY TREATMENT
GRIT CHAMBER
SETTLING TANK
SKIMMING OF FLOATING SOLID AND GREASE
RAW SEWAGE
SCREEN
SAND, GRIT, AND GRAVEL SETTLE OUT
SLUDGE
35% OF ORGANIC POLLUTANTS REMOVED
SECONDARY TREATMENT
CHLORINATION
AERATION TANK
SETTLING TANK
FROM PRIMARY TREATMENT
99% OF DISEASE GERMS KILLED
AERATION SPEEDS BIOLOGICAL DECOMPOSITION
ADDITIONAL SOLIDS SETTLE OUT INTO SLUDGE AT THIS STAGE. 90% OF ORGANIC POLLUTANTS HAVE BEEN REMOVED
AIR
ACTIVATED SLUDGE RETURN
ADVANCED TREATMENT
NITROGEN REMOVAL
PHOSPHATE REMOVAL
MIX TANK
SETTLING TANK
AMMONIA STRIPPING TOWER
AMMONIA EXTRACTED
FROM SECONDARY TREATMENT EFFLUENT
FLOC FORMATION
EFFLUENT
MIX WITH LIME
FLOC SETTLES
AIR
SAND FILTRATION
ACTIVATED CARBON
BACK TO ENVIRONMENT
RECARBONATION PROCESS
REMAINING SUSPENDED PARTICLES AND ORGANIC MATERIAL REMOVED
CARBON DIOXIDE BUBBLED THROUGH EFFLUENT TO LOWER ALKALINITY

PRIMARY TREATMENT

As sewage enters a plant for primary treatment, it flows through a metal screen that removes large floating objects such as sticks and rags that could clog pumps and pipes. After the sewage has been screened, it passes into a grit chamber where sand, grit, small stones and gravel settle to the bottom. Next stop is the settling tank where the speed of sewage flow is reduced and the suspended solids gradually sink to the bottom as sludge. Primary treatment removes about 35 percent of organic pollutants (of plant or animal origin) from the sewage.

SECONDARY TREATMENT

After the sewage leaves the settling tank in primary treatment, it is pumped to an aeration tank where it is mixed with air and sludge loaded with bacteria and allowed to remain for several hours. The aeration speeds up or "activates" the process whereby bacteria break down the organic matter. From the aeration tank the sewage now flows to another settling tank to remove the solids. Afterward, chlorine is added to the water, killing up to 99 percent of disease germs. Secondary treatment removes about 90 percent of organic pollutants. One of the major goals of the new federal water bill is for all municipal wastewater treatment plants to be using secondary treatment by mid-1977.

ADVANCED TREATMENT

In advanced treatment phosphates and nitrogen, undesirable nutrients that cause algae to proliferate, are removed. In this process lime is added to the effluent — or what is now treated sewage — as it comes from secondary treatment. The flow then passes through a flocculation tank. Here the lime takes effect, causing phosphate particles to floc or bunch together into large masses. The larger masses of particles or lumps settle and are removed when the effluent reaches the settling tank. Nitrogen, which occurs in sewage mostly as ammonia, is more difficult to remove. In one method the effluent is passed through a stripping tower where ammonia is extracted in a process that involves blowing large amounts of air through the sewage. The effluent after recarbonation then undergoes additional cleansing in passing through sand filtration beds and finally through activated carbon. By this time the remaining suspended solids and organic matter have been removed. The result is water almost good enough to drink.

summer reconstruction of a dam on Turkey Hill Brook above an 18th century sawmill is scheduled. The dam and sawmill are part of the remnants of an 18th and 19th century village settlement that also includes a blacksmith shop (ca. 1840) and an abandoned stagecoach road. The historical attractions, a millpond and a gorge with waterfalls cascading nearly 40 feet — all contained in a setting of towering forest trees — combine to make this 350-acre park a small but precious gem.

Of less romantic note, but nonetheless important for revitalizing our state forests and parks, is DNR's road and trail construction program. About 90 miles of road renovations are under way, beginning with the repair of a 16-mile roadway running through Mt. Greylock State Reservation from Lanesborough to North Adams, and with the construction of a new access road for Wells State Park in Sturbridge. An additional 70 miles of multiple-use trails will also be completed this year. These trails — which can be used for hiking, horseback riding and cross-country skiing — will be developed in Pittsfield State Forest, Savoy Mt.-Florida State Forest, Beartown State Forest in Monterey and October Mt. State Forest in Lee and Lenox.

An initial 37 miles of bicycle trails (the 8-foot-wide paved bike trails will be adaptable for snowmobiling in winter) are being planned for eight state forests or parks. These include Martha's Vineyard State Forest, Freetown State Forest, Myles Standish State Forest in Plymouth, Nickerson State Park in Brewster, Wompatuck State Park in Hingham, Bradley Palmer State Park in Topsfield, Chicopee Memorial State Park, and Robinson State Park in Agawam.

Ground checking — determination of grades, wet spots, stream crossings, location of trails to enable minimal tree and vegetation removal — has been completed. Trail construction — cutting back brush, grading and paving — is scheduled to begin this summer.

All these renovations and improvements — comfort stations, visitor centers, dams, campsites and trails — will certainly help to upgrade many parts of our park system. But it is only the beginning of the long, long road to tapping the full potential of our rich recreational and natural resources.

Arthur W. Brownell

DIVISION DIRECTORS

CONSERVATION SERVICES	Matthew B. Connolly Jr.	727-3170
FORESTS AND PARKS	Bruce S. Gullion	727-3180
LAW ENFORCEMENT	Kenneth A. Crossman	727-3190
MARINE FISHERIES	Frank Grice	727-3193
MINERAL RESOURCES	Robert C. Blumberg	727-4697
WATER POLLUTION CONTROL	Thomas C. McMahon	727-3855
WATER RESOURCES	Charles F. Kennedy	727-3267

ON THE DOCKET

The following are major environmental bills now under consideration in the Massachusetts legislature.

ENVIRONMENTAL REORGANIZATION BILL (H6110) — Sponsored by Governor Sargent, this bill is by far the most important environmental legislation to come down the pike in this, or for that matter, any year. The bill calls for sweeping consolidation of environmental responsibilities — now fragmented and scattered among four cabinet secretaries, seven major departments and 49 state agencies — under a single operating agency, the Department of Environmental Affairs. Principal agencies merged into the new Department would be the Departments of Natural Resources and Agriculture and the Metropolitan District Commission. Once the superagency is formed, five environmental districts would be established throughout the state. This alignment would decentralize delivery of environmental services and make state government more efficient and responsive to the needs of the people.

FARMLAND ASSESSMENT ACT (H6307) — Last year a state constitutional amendment was passed by voters authorizing the Massachusetts General Court to enact legislation to relieve the tax burden on owners of farmlands. This legislation would tax farmland owners for the actual, not potential use of the land, thus not only helping the small farmer to stay in business but also protecting open space from urban development as well.

MASSACHUSETTS CLEAN WATERS ACT AMENDMENT (H6059) — Brings the state law into conformity with the Federal Water Pollution Control Act Amendments of 1972, enabling the state to run the permit system for the discharge of municipal and industrial waste water. The bill's most important provision calls for the state to provide funding, which on top of federal grants, would cover 90 percent of the costs of constructing municipal treatment plants. In all ramifications the bill is essential for waging total war against water pollution.

MASSACHUSETTS ENVIRONMENTAL LAND AND WATER MANAGEMENT ACT (H2327) — Seeks to protect water and land resources in the Commonwealth. The Act would establish a commission and a state land-use planning agency to recommend guidelines for development in areas having significant impact on environmental, historical, natural or archeological resources.

MINERAL RESOURCE BILLS (H653, H1230, H152) — Designed to conserve mineral resources and to prevent despoiling the landscape, these bills seek to establish state guidelines for land mineral extraction and site rehabilitation, and, most specifically, reclamation of unsightly gravel pits.

PHOSPHATE BILLS (H1227, H5484) — Call for a ban throughout the state on the sale of detergents containing phosphates. While not a complete ban (some phosphates will be permitted), this bill would affect a number of detergent manufacturers selling in the state.

NEPONSET RIVER BILL (S161) — Heavy pressure to develop the extensive floodplains and wetlands — vital conservation zones — of the Neponset watershed continues. Bill calls for DNR and MDC to acquire land along the Neponset River to save wetlands from urban encroachment and develop them for recreation uses. A $2.5 million bond issue is proposed to fund this conservation-recreation program.

NOISE POLLUTION BILLS (H6273, H4361, H6300) — Call for establishing sound-level limitations and other noise regulations on the sale and operation of motor vehicles, motorcycles and other sources of noise pollution in the state.

WILDLIFE MANAGEMENT BILL (H5851) — Calls for funding for the Division of Fisheries and Game to protect indigenous endangered species and manage nongame species such as songbirds, small mammals, amphibians and even reptiles. At present the Division manages game species such as pheasant, ducks, deer and bear.

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BORDERLAND: THE UNSPOILED HERITAGE

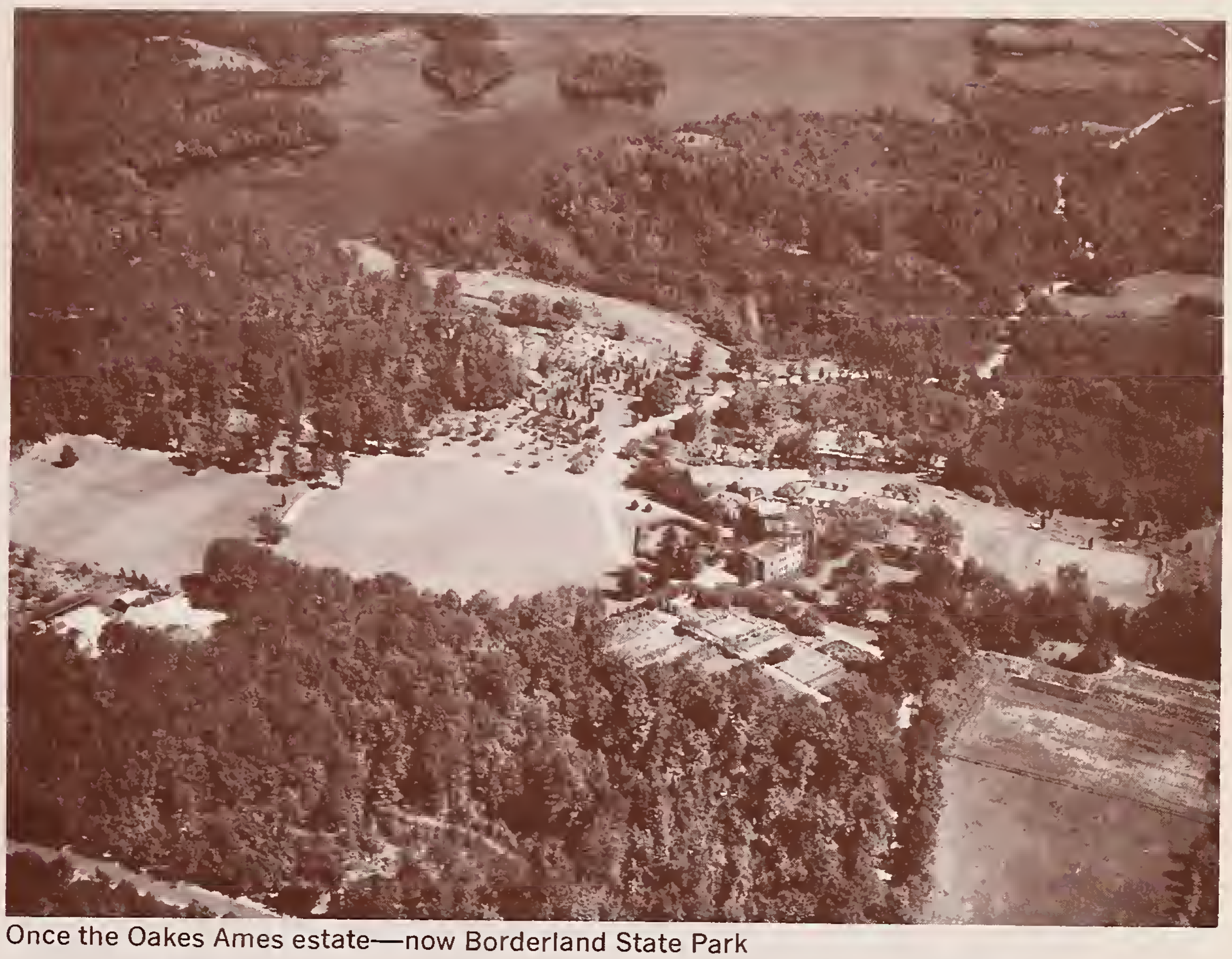
Borderland State Park, formerly the Oakes Ames estate, will be opened officially this summer. Once the private preserve of one of New England's most illustrious families, the park's 1250 unspoiled acres of oak, beech and pine woods, ponds, cedar swamps, glacial rocks and upland meadows now lie in the public domain.

Two years ago the Ames family decided to sell their estate to the Commonwealth in order to insure the preservation of the area's natural beauty. The family had named the estate Borderland because of its location on the borders of Sharon and Easton and near the town boundary lines of Mansfield, Foxboro and Stoughton (communities located about 35 miles south of Boston). The name Borderland though, signifies far more than a physical locale; as the visitor walks over the land, he moves not only through a world of natural beauty, but a historical and cultural experience as well.

From the main entrance to Borderland the first view is one of manicured lawns and formal gardens dominated by a stone, ivy-covered mansion—in the style of an English country manor. Curving away from the attended grounds, a gravel road passes by open fields, becomes a dirt path and then plunges into dense woodlands.

Here sunlight filters through the forest canopy, illuminating a moss glade or gilding a great oak tree. Forest sounds fill the air; the calls of birds, the hum and buzz of insects. A ruffed grouse thrashes about in the dry leaves. A chipmunk scurries over a rotting fallen tree. The forest evokes a mood, akin to what Henry Thoreau must have felt when he rhapsodized on one of his nature walks: "The wood, earth, mould . . . exist for joy."

The forest path winds along Leach Pond, once a virgin wetland wilderness, but transformed into a pond by General Shepard Leach, an early 19th century settler. General Leach was believed to have cut down the white cedars and dammed the wetland to create a reservoir to insure a constant flow of water to power his iron mill. Today the visitor can still stand on the remains of General Leach's earthen dam and gaze out over the peaceful solitude of the pond and observe ducks, osprey and the Great Blue Heron—and perhaps if patient and lucky, he can spot raccoon, muskrat, otter or mink along the banks.


Once the Oakes Ames estate—now Borderland State Park

The path emerges from the woods before a rambling frame house and barn built by Colonel Israel Tisdale in 1811. Located off the Old Mountain Road, a well-traveled way in bygone times, the Tisdale House was a bustling place in the 19th century "where everyone was sure to receive an old-fashioned hearty welcome." From the house a walk on the Borderland continues over an old wagon path that passes by moss-covered stone walls and through fields where crows startled by the sound of footfalls fly out of the tall grass while above, hawks circle lazily looking for prey. The path passes between Puds and Upper Leach Pond, both renowned to locals for their abundance of pickerel, bass and perch.

Near a working farm, the wagon-path merges with a gravel road that eventually leads back to the sweeping lawns, the decorative shrubbery, the hidden garden pools and the imposing Ames mansion itself. Inside the mansion the visitor discovers a fascinating mixture of Oriental, European and American antiques—a thousand mementos of the Ames family history, a history inseparable from that of the nation.

THE HOUSE THAT AMES BUILT

They were shrewd, industrious and inventive; puritan in habit, visionary in outlook—pure Yankee stock right to the core. Their forebear, an English colonist, settled in Braintree, Massachusetts around 1638. The first notable member of this family was John Ames (1738-1803)—a blacksmith and Revolutionary War major who forged guns and shovels for the Continental Army. But it was Oliver Ames (1779-1863), John's son, who launched the industrial empire on which the fame and fortune of the Ames family would prosper.

After mastering his father's trade, Oliver Ames moved the shovel shop from

Bridgewater to North Easton. There, driven by his boundless energy and inventive genius—and with all the impetus from the embargo and War of 1812, which removed foreign competition—Oliver Ames built the shop into a big business. His marketing strategy was shrewd and simple: manufacture a lighter and less durable shovel than the implements of the time in the belief that iron and shovels were cheaper to purchase than muscle power and more easily replaced. By the time Oliver retired, his business was worth $200,000, branches existed in Braintree and Canton and the company was named, appropriately enough, Oliver Ames and Sons.

The Ames mansion: both monument and symbol of the family

The sons, Oakes (1804-1873) and Oliver (1807-1877) took up where their father left off—and the business boomed. With a supply of Irish immigrants affording a cheap source of labor, production expanded. The California gold rush of 1848, then the Australian gold rush and later the agricultural development of the Northwest territory pushed profits higher and higher. The company became a virtual monopoly. So wide-spread was the use of the Ames shovel that it was renowned as far away as South Africa and declared "legal tender in every part of the Mississippi Valley." The Civil War furthered the family fortune and by the war's end the company was worth $8 million.

The brothers, however, were emboldened toward even bigger things. Fascinated by the vision of a transcontinental railroad connecting the East with the West coast, they became involved in the financing and development of the Union Pacific Railroad. Unfortunately the transcontinental railroad scheme went sour and the Ames family went bankrupt. But through the indefatigable energy and ingenuity of both Oakes' brother and his son, the Ames fortune was restored, debts settled and their railroad interests revived. After successfully helping to rebuild the family fortune, Oakes' son, Oliver, moved into politics serving with merit for three terms as governor of Massachusetts.

As so often happens in the history of illustrious families, the wealth and power achieved through the raw, productive energy of the early generations afford succeeding generations the position, education and margin of comfort to turn their efforts to fields of public service, philanthropy and scholarship. In the case of Oakes and Blanche Ames, latter-day descendants of the family, this transition was complete.

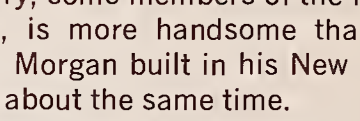
Their marriage in 1900 resulted in a perfect union. Oakes (1874-1950), a grandson of Oakes Ames, the 19th century builder of the family's fortune, was a Professor of Economic Botany at Harvard, one of the world's leading authorities on orchids and director of the Arnold Arboretum in Boston. Blanche (her maiden name was also Ames—no relation) was a prominent artist, a pioneer of women's rights and early advocate of birth control. She possessed such extraordinary vitality that even at 80 she had the drive to embark on—and complete six years later—a 625-page biography of her father, Adelbert Ames, a Civil War general and Reconstruction governor of Mississippi. Together, this talented, intellectually probing couple founded Borderland.

In 1903, seeking to escape the stuffy Victorian atmosphere of their North Easton home, Oakes and Blanche moved to the town border, at that time considered a move to the "country." There they settled in the Tisdale house and with conservation clearly in mind began acquiring the rest of the lands that now comprise Borderland.

Oakes and Blanche were devoted to this unspoiled enclave with its wetlands, oak, beech and pine woods, its glacial rocks and ridges, blueberry pastures, cedar swamps and upland meadows. They preserved the ponds by repairing and building cement dams and spillways; which in turn helped to preserve the whole Taunton River watershed by keeping water levels high enough to sustain the flow of brooks and streams even during the driest of summers. They also revived the use of the land, planting flowers, raising vegetables and setting up a turkey and chicken farm.

In 1910, concerned about living in a non-fireproof house and needing more living space, Oakes and Blanche built the fieldstone house which stands now as both monument and symbol of the Ames family. Designed by Blanche in the manner of an English country house, the mansion was constructed from stones cut from the stone walls of Borderland. It was the first house in the area to have electricity and an automobile garage. Its many windows and porches were designed to create a sense of space and communion with the outdoors. The library, some members of the family contend, is more handsome than the one J. P. Morgan built in his New York mansion about the same time.

Blanche's vitality and ingenuity never flagged when it came to protecting her house, her land—and her country. During World War II, Blanche experimented with a device she patented and had accepted by the U.S. Army. It consisted of wires hung from balloons to snarl airplane propellers and bring down low-flying enemy aircraft. Today, although this remarkable woman is gone (she died in 1969 at the age of 91), protection of her beloved estate remains assured. Thanks to the dedication and foresight of the present Ames generation, Borderland has become a state park and the great natural and cultural heritage of the House of Ames has been preserved for posterity.



THE CREATURE FROM THE CONTINENTAL SHELF

The American lobster (Homarus Americanus) is known as the king of seafood. (Indeed if the price of lobster continues to soar, the crustacean will soon become the culinary preserve only of royalty.) Lobsters range from Labrador to the Carolinas; from the inshore intertidal zone to the offshore waters of the Continental Shelf—the shallow, flat submerged extension of the continental land mass that teems with marine life. Although they will live on nearly any type of bottom, including clay, silt, cobble or sand, lobsters seem to prefer areas where ledges or boulders provide shelter for themselves as well as for other species upon which they prey. Hence the prevalence of lobsters off the rocky coasts of Maine and Canada.

The question has always been posed whether inshore and offshore lobster stocks intermingle. Many Massachusetts lobstermen have long contended that at least in some areas along the coastline seasonal migrations from offshore areas to the coastal waters occur. Tagging studies carried out by the Massachusetts Division of Marine Fisheries have now documented that from the tip of Cape Cod southward there is some intermingling of stocks. Moreover, it has been shown that many large egg-bearing females move into Massachusetts coastal waters in early summer and shed their eggs in the area off Provincetown. Quite possibly then, the progeny from these offshore lobsters contribute substantially to our future inshore stocks. Any program designed to regulate lobster fishing must be applied, therefore, both to inshore and offshore lobster populations if survival of lobsters is to be assured.

SHORT SUBJECTS

BACK IN THE SADDLE

The popularity of horseback riding in Massachusetts has gone from a trot to a gallop. The number of riding horses in the state is now estimated to be over 100,000, up from 40,000 just three years ago—and the number is still rising. Why the big horseback riding revival? In part urban man's urge to return to nature and in part the challenge of trying to master a good steed.

But just when the demand for bridle trails is on the increase, the amount of available trail lands is on the decrease as the developer's bulldozer takes its toll. This situation has led to greater demand for riding trails in state parks and forests. Yet with the rise of hiking, bicycling, cross-country skiing, snowmobiling and trail bike riding—all vying with horseback riding for trails—a colossal traffic jam could soon take place in the parks. For horseback riders the heavy traffic presents a real safety hazard since horses are often frightened by the noise of snowmobiles, trail bikes or offroad vehicles roaring by.

Steps are being taken to prevent the traffic from getting too congested. The Department of Natural Resources, along with the Massachusetts Horseman's Council, Bay State Trail Riders Association and the Trails Advisory Committee, statewide organizations especially interested in equestrian trails, are working to set up a compatible trail system throughout the state. A system of three types of trails—foot, bridle and recreational vehicle—is being developed on state lands. Each type of trail will be marked by different color signs to reduce trail use conflicts.

Other private groups are making considerable progress too. The Worcester County Trails Advisory Committee has acquired an easement on land establishing a trail connector between two large chunks of state-owned land in the towns of Spencer and Leicester. The new Land Owner Liability Law (Ch. 575, Acts of 1972), which releases a landowner from legal responsibility for accidents on his property, provides another catalyst for extending trails across private property. This new law should encourage utility companies to open up many miles of power line rights-of-way for recreational trails.

So pardner, saddle up! Here's a short list of some of the state's "happy trails:"

DNR MANAGED	
Bradley-Palmer S.P.	Ipswich
Harold Parker S.F.	No. Reading
Myles Standish S.F.	So. Carver
Otter River S.F.	Winchendon
Pittsfield S.F.	Pittsfield
Upton S.F.	Upton
MDC MANAGED	
Blue Hill Res.	Milton and Canton
Breakheart Res.	Saugus and Wakefield
Middlesex Fells Res.	Malden, Medford, Melrose, Stoneham and Winchester
Stony Brook Res.	Hyde Park and West Roxbury sections of Boston

SEX AND THE SINGLE GYPSY MOTH

Ever since the gypsy moth was introduced into the U.S. over 100 years ago, man has been racking his brains to come up with a way of stopping the obnoxious pest from annually defoliating and destroying hundreds of thousands of forest acres from Massachusets to Michigan. He has fought the gypsy moth with brooms, rakes, shovels, lead arsenate, kerosene, and boiling water. In more recent times an arsenal of pesticides such as DDT, Dylox, Gardona and carbaryl have been employed—with some success. But the gypsy moth is still with us. The latest battle strategy calls for an assault aimed at sexually exhausting the gypsy moth into inactivity.

Presently the Massachusetts Department of Natural Resources is conducting an experiment to determine whether gypsy moth populations can be controlled and depressed through the use of chemical sex attractants. The experiment involves the use of a synthetically produced sex lure called Disparlure. As a perfume, Disparlure simulates the natural odor given off by the female gypsy moth to attract males for copulation. The chemical attractant, which is non-toxic and inexpensively produced, was sprayed aerially in July over 16,000 acres of state forest lands lightly infested with gypsy moth populations in the towns of Erving, Northfield and Warwick.

Project director Charles S. Hood, Chief of the Bureau of Insect Pest Control, draws this analogy to explain how Disparlure works: "It's like walking into a ballroom where one woman is wearing "Evening in Paris" perfume. Naturally you are attracted to her. But supposing the perfume was sprinkled all over the place. You couldn't tell who was was wearing it."

Similarly when Disparlure is sprayed throughout the forest, the male gypsy moth becomes very confused and flutters around, alighting everywhere but never actually mating with the female. Soon the male, who has short life span, dies off. The theory is: no mating, no progeny and therefore, as some optimistic officials hope, an eventual decline of the gypsy moth species.

Gypsy's Last Tango?

WILL THE AMERICAN LOBSTER BECOME AN ENDANGERED SPECIES?

Ever since man began fishing for lobster, he has gone about the job piloting his rugged little boat along the coastline, dropping a few pots or traps into the water and hauling in a modest catch the following day. Lobstering was a small scale business—for the most part, a one-man operation.

But in recent years as the stocks of inshore lobsters continued to decline and the taste for lobster kept growing insatiably, commercial lobstering became an elaborate affair. In order to meet the soaring demand, trawlers or draggers, equipped with sophisticated gear and manned by several crewmen, were going far offshore for days to lay down long lines of pots or scoop up lobsters in nets. By 1971, nearly 10 million pounds or one-third the total lobsters landed in the U.S. came from offshore waters.

The big problem now is that lobsters are unprotected and in danger of being over-exploited since lobster fishing in offshore waters has become a free-for-all. The laws to conserve inshore stocks of lobsters don't apply beyond the 12-mile U.S. fisheries limit. Of particular concern to Massachusetts is the rich, unrestricted lobster grounds along the edge of Georges Banks, lying from 50 to 100 miles off Nantucket on the Continental Shelf. Here and in other offshore waters such restrictions as size limits, protection of egg-bearing females, licensing and reporting—so vital to preventing the depletion of the species—just do not exist.

It is true that nearly every state with a coastal lobster fishery has regulations on inshore lobstering. And these regulations apply whether the lobsters are taken from coastal or offshore areas as long as they are landed at Massachusetts, Rhode Island or several other state ports. But for domestic vessels lobstering in New England waters and landing in places such as Virginia, and for the foreign ships which either unintentionally or intensively trawl for the crustacean, no regulations apply—it is indeed "catch as catch can."

Acutely aware of the vital role lobster fishing plays in their economies, the Atlantic coast states from Maine to North Carolina, with the support of the National Marine Fisheries Service, have banded together to promote protection of the lobster. The states have agreed that effective control over this resource is essential and that some mechanism for commercial preservation of the species is required. The states have also urged that the American lobster be decared a creature of the Continental Shelf. This would secure for the U.S. the exclusive right of exploitation and management of lobster resources in accordance with the 1958 Geneva Convention on Sea Bed Resources.

Unfortunately, the states' agreement is not enough. Implementing any regulations controlling activities on the high seas beyond the 12-mile limit is a matter of international relations and in all likelihood lies within the province of the federal government. But for various reasons the federal government has not been particularly anxious to push extension of U.S. jurisdiction beyond the 12-mile limit. Reflecting the federal government's position, the National Oceanic and Atmospheric Administration (NOAA) decided early this year against naming the lobster a creature of the Continental Shelf (although the red crab, another crustacean, has been so designated). Instead, the government has preferred to rely on bilateral and international agreements with foreign nations that fish off our coast to provide necessary controls. Its contention is that treaties would better facilitate the establishment of regulatory mechanisms while not jeopardizing U.S. interests in other areas.

The states, of course, aren't too happy with the federal position. They point out that existing bilateral and international agreements have failed miserably to prevent the over-exploitation of finfish on the Continental Shelf. So there is no reason to believe that these kinds of agreements would be any more successful in regulating lobster fishing. The states' argument was brought into sharp focus last spring when the Coast Guard caught two Japanese ships setting out 3000 lobster pots on the edge of the Continental Shelf in violation of a bilateral agreement between the U.S. and Japan.

With federal efforts flagging, the states have decided to press their own cause. Massachusetts has adopted legislation (Chapter 1104 of the Acts of 1971) to extend management over marine resources up to 200 miles off the coast. Rhode Island has adopted a similar law and other coastal states are considering various forms of jurisdiction.

Based on its extended fisheries law, the Commonwealth is considering adopting regulations designed as an interim measure to provide basic conservation protection to the offshore lobster resources. These regulations would require that licensing, mandatory catch statistics, minimum size limits and protection for egg-bearing female lobsters—presently required of Massachusetts lobstermen—be placed on all lobster fishing up to 200 miles off the state's coast.

Nor have Massachusetts and other coastal states given up trying to persuade the federal government to save the American lobster. NOAA is being urged to reconsider its decision against declaring lobster a creature of the Continental Shelf. And Congress too is being pressed to pass legislation to protect offshore lobster stocks. If either NOAA or Congress takes action to establish an effective management program over offshore lobstering, Massachusetts will not implement its own regulations.

More than any other state, Massachusetts has the most to lose if lobster fishing is left unmanaged. Last year about 8 million pounds of lobster worth $10 million were landed in Massachusetts. Add to this the fact that Boston serves as a major wholesaler of Canadian and Maine lobsters, and the total value of the industry exceeds $20 million annually. If the uncontrolled, senseless exploitation of lobsters is allowed to continue, as in the case of haddock and other finfish resources off our shores, the American lobster will be driven to the verge of commercial extinction and a vital industry crippled.

COMMISSIONER'S CORNER:

ON MANAGING BORDERLAND

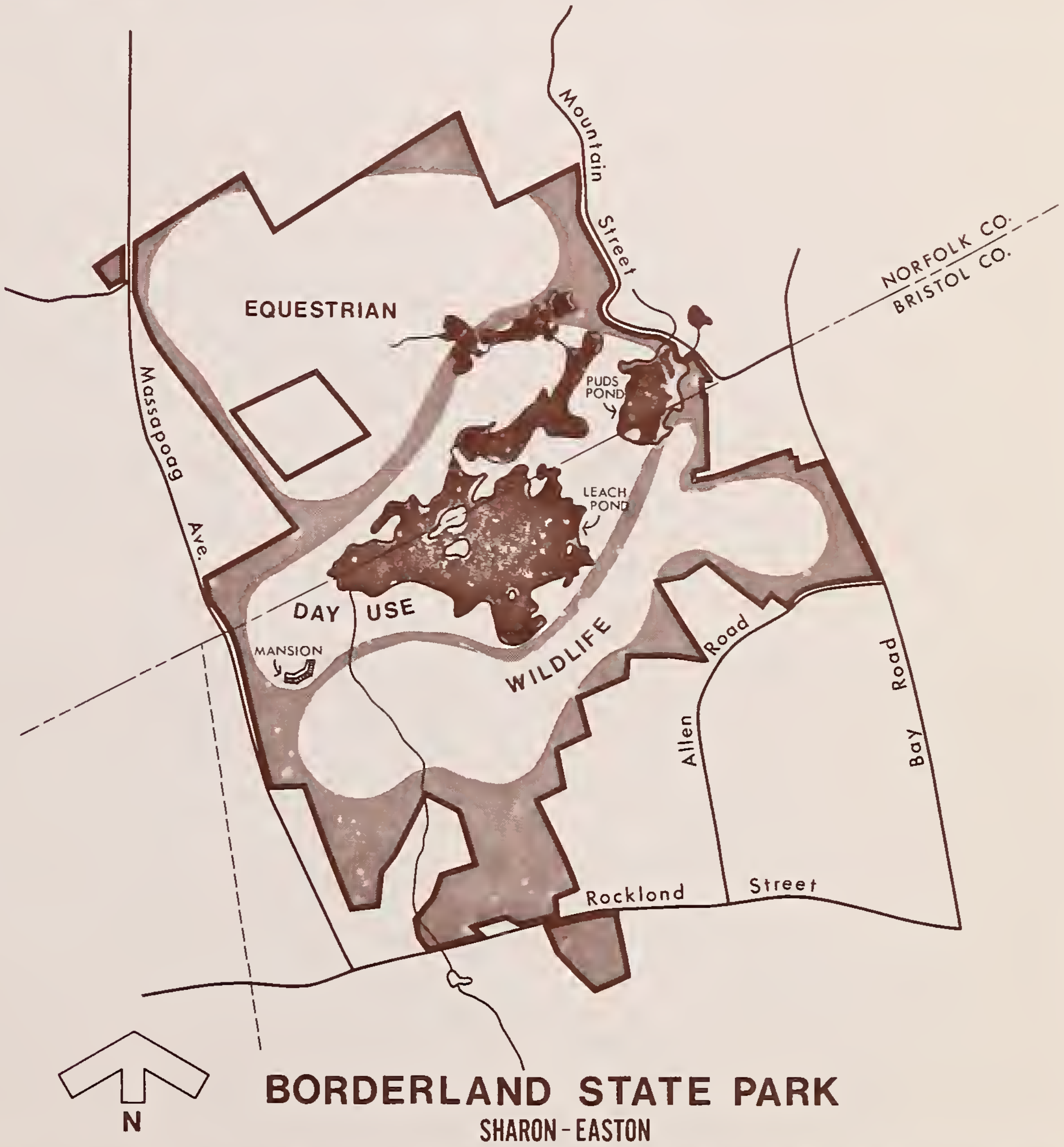
When the Department of Natural Resources took over Borderland two years ago we were aware of the enormous responsibility and challenge of managing a park that contained such a rare blend of cultural, natural and historic values. In order to prevent destroying the integrity of this land we have proceeded cautiously in developing plans for public use. To allow for a broad point of view, a Borderland Advisory Council, a citizen's group to assist the Department on development and management of the park, was established. Together, the DNR and the Council have instituted a management concept, or theme if you will, of preserving the quiet solitude of the park.

All motorized vehicles—snowmobiles, motorcycles, automobiles—will be excluded from the area. Parking will be established on the periphery where it won't intrude on the land. Only non-motorized boats and canoes will be allowed on the ponds. Only "passive" recreation, such as fishing, hiking and horseback riding, will be encouraged.

A second aspect of management—one which we are still in the process of developing—is to set up a program of nature interpretation and outdoor education. We plan to institute a system of self-interpretative trails. Each trail would pass through a different environment such as a wilderness area, wetland or cultivated farm land. A garden and mansion tour will be offered, which would include a guide system for the blind and the handicapped. We are also looking into the possibility of establishing a model New England farm and an equestrian center, perhaps near the Tisdale farm. What we intend is that an outdoor interpretation program will not only inspire and teach, but provide an enjoyable experience as well.

Paradoxically, the natural beauty of Borderland is man-made. The ponds, fields, stone walls, roadways—indeed the whole design of the park is the work of man. Oakes and Blanche Ames planted trees and shrubbery to beautify the landscape, cultivated the fields to yield produce and practiced fish and wildlife conservation to maintain an ecological equilibrium. The family took a plot of land that would otherwise have remained dull and uninteresting and made it beautiful and productive.

The Tisdale House: a bustling place in the 19th century



BORDERLAND STATE PARK
SHARON - EASTON

In this day and age where man has come to be viewed as a destructive force in nature, Borderland stands as a glowing example of man as a positive force of change, as the creature most gifted to make an environment beautiful. As we see it, the task of our Department is to continue the stewardship of the land that the Ames family so cherished and to preserve the estate as a model demonstrating the best of man in nature for all of us.

Arthur W. Brownell

Arthur W. Brownell, Commissioner

QUIET FLOWS THE TAUNTON

As the Taunton River and its tributaries meander slowly through southeastern Massachusetts, draining 530 square miles of land before emptying into Mt. Hope Bay, they pick up virtually every conceivable kind of pollution. Inadequately treated or raw sewage flows into the river system from urban areas such as Brockton, Taunton and Fall River. Chemicals, toxic metals, acid and alkaline wastewaters are dumped in by textile, electroplating and food processing industries scattered throughout the river basin. Thermal pollution from several power plants further degrades the waters. Rural areas provide little relief from pollution; pesticides from cranberry farming seep into the Winnetuxet and Nemasket tributaries, while animal wastes from dairy farming in Bridgewater make their way to the mainstem.

But one of the state's most polluted river basins may soon be among the first to be significantly upgraded. The Massachusetts Division of Water Pollution Control, which has been studying the basin since 1967, has completed a water quality management plan for the Taunton River Basin. It is one of the first plans from a New England state to be filed with the U.S. Environmental Protection Agency under the requirements of the new federal Water Pollution Control Act Amendments of 1972. It means that a coordinated program and funding to upgrade the Taunton and its tributaries can now get underway.

The plan calls for the basin to be divided into seven water pollution abatement districts. Each district will be required to upgrade or build municipal wastewater treatment facilities incorporating secondary, and in most cases, advanced treatment in order to meet water quality standards. Industries will be encouraged to pre-treat wastes and tie into municipal facilities or else build their own wastewater plants.

Costs for constructing treatment plants are still to be worked out. It is estimated though that treatment facilities in the Old Colony Region—which includes the communities of Bridgewater, East and West Bridgewater, Abington, Whitman, Easton and Hanson—will cost about $30 million; and in the Rumford River Region—which includes Norton, Mansfield and Foxborough—$14 million. Ninety percent of construction costs, however, will be covered by federal and state grants. When all the major projects are complete by 1977 or 1978, the Taunton and its tributaries will flow as quietly as ever—and much cleaner than in many years.

FOR THE BIRDS

Massachusetts would appear to be a state of bird feeders—that is if you subscribe to the following statistics. A study conducted by researchers from the U.S. Forest Service's Pinchot Institute for Environmental Forestry Research shows that 43 percent of households in the town of Amherst regularly feed birds. Each household spends an average of $8.80 per year on bird feed. This means that residents of Amherst spend at least $20,000 per year feeding song birds.

Another study conducted by an independent market research agency indicates that in Boston, 24 percent of the city's 861,000 households reported feeding birds. Each household's average feed expenditure was $8.20. Based on these figures, Boston residents may spend as much as $1.7 million per year on bird feed.

Taking the more conservative Boston estimate and projecting it on a statewide level of 1.8 million households: then in Massachusetts close to $3.4 million is spent annually to foster bird populations and realize the pleasure of wildlife contact.

The Forest Service has a few helpful hints in providing nesting areas for songbirds: If you have no tall trees in your yard, install a bird house. English sparrows, house wrens or tree swallows will probably use it. Unmowed lawn edges and low shrubs are perfect reproductive sites for song sparrows. Forks of low trees and shrubs are suited for the nests of robins, while dense shrubbery draws cardinals. Scarlet tanagers seek out high branches to build their flat stick nests and Baltimore orioles suspend their basket nests on high branches of mature trees.

HAPPY BIRTHDAY DEAR COMMONWEALTH?

Will the state celebrate its Bicentennial birthday in style? A lot depends on whether a bill (S1819) now before the legislature is passed to create a non-profit, public corporation to carry out major portions of the state's Bicentennial program. The proposed Massachusetts Bicentennial Corporation would be authorized to develop the Boston Harbor Islands and the Holyoke Range in western Massachusetts as conservation and recreation parks by July 4, 1976.

A $25 million state bond issue will finance the two projects: $20 million allocated to the Harbor Islands, and $5 million to the protection of the Holyoke Range. The corporation would be able to cut through bureaucratic red tape, circumvent the slow machinery of government and draw on the resources of both the public and private sector in order to complete development of the parks in time for the Bicentennial.

Both Boston Harbor Islands and the Holyoke Range would be developed along the lines proposed by the Massachusetts Department of Natural Resources. The Harbor Islands would provide a sorely-needed area of natural conservation, public recreation and historic preservation in the heart of an urban setting. The Holyoke Range, an area of unique scenic, geologic and historical value in the Connecticut River Valley, would be protected from urban encroachment and its natural beauty preserved for public enjoyment.

DIVISION DIRECTORS

CONSERVATION SERVICES Matthew B. Connolly Jr.	727-3170
FORESTS AND PARKS Bruce S. Gullion	727-3180
LAW ENFORCEMENT Kenneth A. Crossman	727-3190
MARINE FISHERIES Frank Grice	727-3193
MINERAL RESOURCES Robert C. Blumberg	727-4697
WATER POLLUTION CONTROL Thomas C. McMahon	727-3855
WATER RESOURCES Charles F. Kennedy	727-3267

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DAVID KALES, Editor
LORRAINE AGRI, Graphics Coordinator
JACK WOOLNER, Photographer
JAMES E. HEALY, Information & Publicity
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ENVIRONMENTAL RESOURCE

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SPECIAL ISSUE:

CONSERVATION COMMISSIONS AT THE CROSSROADS

The Grassroots

It was hardly a historical accident that the conservation commission movement began in Massachusetts. The movement evolved directly out of the state's Yankee tradition of home rule and town meeting government. But it wasn't until the 1950s, with the growing awareness that something was going wrong in our landscape — unkempt parks, polluted water, cluttered roadsides — that a groundswell to establish grassroots organizations to deal with the problem of environmental deterioration arose. By 1957 the ground-swell had led to the passage of the Conservation Commission Act. The Yankee tradition of "taking things in hand" had prevailed once again.

The initial impact of the act was hardly earth-shattering. It simply granted a town or city the authority to establish a conservation commission "for the promotion and development of its natural resources." Conservation commissions, consisting from three to seven members, would be appointed by the selectmen, mayor or town manager for staggered terms of one to three years.

The implications of the act, however, were far-reaching. Conservationists had now gained an official voice in local government. It was the first step in gaining some control over the forces that shaped the local landscape.

Since then, the conservation commission movement has spread across the state. Today 319 out of 351 communities in the Commonwealth have conservation commissions. Moreover, the commissions' function has grown far beyond simply that of environmental advocate. Commissions are now involved in acquiring lands, regulating wetlands development, managing natural resources, promoting conservation mapping and zoning, and educating the public in environmental quality.

The following report takes a look at the progress, problems and prospects of the conservation commission movement in Massachusetts.

In the beginning, conservation commissions — where they existed at all — played a minor role in town affairs. Their work was mostly comprised of sponsoring such environmental niceties as cleanup campaigns, tree plantings and nature walks. The image of commission members as bird-watchers, do-gooders and old ladies in tennis shoes only served to support the organization's ineffectiveness.

Several events, however, changed all this. In 1960 the Self-Help Program was setup. This program, administered by the Massachusetts Department of Natural Resources, reimbursed communities up to 50 percent of the costs of acquiring conservation lands.

The law was a big shot in the arm for the flagging conservation movement. The number of commissions increased dramatically throughout the state, since in order to qualify for Self-Help funds, a town had to have a conservation commission. Now the commissions, which formerly carried little weight in town affairs, had at least the persuasive power of dangling the prospects of state aid before the town meeting.

CONSERVATION LAND
PRESERVED BY THE PEOPLE FOR ENJOYMENT AS A NATURAL AREA
TOWN OF LINCOLN
BUREAU OF OUTDOOR RECREATION
DEPT. OF INTERIOR
MASS. DEPARTMENT OF NATURAL RESOURCES

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The movement got another big boost with the creation in 1963 of the Division of Conservation Services in the Department of Natural Resources. Conservation Services was setup to coordinate all of the DNR's relations with the commissions and to offer technical services and advice. Most importantly, the Division was responsible for administering the Self-Help Program. Heartened by Self-Help aid, the number of commissions jumped 50 percent in two years.

But it was passage of another law — The Wetlands Protection Act (Chapter 784 of the Acts of 1972) — that really gave commissions some clout. Under this law, conservation commissions were granted the authority to regulate development on wetlands in their communities. In other words, the commissions now had the power to set conditions under which a developer is permitted to fill, dredge or otherwise alter a wetland.

This accession of regulatory power served to raise the commissions to the level of planning boards, finance committees and other town agencies. The commissions had arrived; they were now part of the political machinery of local government.

Regulating the Wetlands

The Wetlands Protection Act has turned out to be a mixed blessing for conservation commissions. On the one hand, the new status — and political muscle — of commissions in a community have attracted a greater number of professional people. In addition to lawyers, teachers and engineers, many concerned women (who, while highly motivated, have been traditionally excluded from local government) have come aboard to offer their services.

Moreover, says Robert Ellis, President of the Massachusetts Association of Conservation Commissions, “Because the job of regulating development on wetlands is such a complex, serious business, it makes commissions more pragmatic and therefore more effective in dealing with the political realities in a town.”

On the other hand, responsibility for administering the Wetlands Protection Act is not without its problems. Commissions report they are struggling to interpret and properly administer the law, which requires them to determine whether development on a wetland will have any adverse effect on water supplies, storm and flood prevention, pollution prevention or fisheries protection. Upon determination, the commission must issue an “order of conditions” for the developer to follow to insure there will be no adverse effects.

This is no easy task. These kinds of determinations require at least a fundamental understanding of such technical fields as biology, public health, hydrology and engineering — an understanding and expertise that most commissions sorely lack. Also, as part-time volunteers, commission members have limited time and energy to devote to the job. In many cases, especially ones involving a big developer who can draw on a plenitude of financial, legal and technical resources, the commissions are completely out-matched.

Politics also can play a role in administering the law. A pro-development bias is not uncommon among the “town hall crowd.” Many selectmen and town officials still view wetlands as mosquito-breeding swamps, and their protection as a hindrance to attracting development to widen the town's tax base. As many commissions have learned, it's tough to fight city or town hall.

When politics is accompanied by legal procedures, effective administration of the wetlands law becomes a real hassle. Alexandra Dawson, Director of Services of the Conservation Law Foundation of New England, describes a few of the difficulties conservation commissions have in enforcing the law:

“For one thing, there is a problem of getting a reluctant police chief to serve a cease and desist order on his neighbor, a local developer, who is filling in a wetland without a permit. Another sticky situation is to move the town counsel to buck the town hall boys and draw up a court order against a local developer who has failed to file a notice of intent and a plan of his proposed activity on the wetland. Perhaps the greatest discouragement to enforcement is that court hearings, ensuing battles, appeals and final decisions all take time — precious time during which a wetland can be irrevocably ruined.”

Still, despite the problems in administering the Wetlands Protection Act, on balance the record shows — much to the surprise of officials and developers alike — that the conservation commissions are managing to do the job. The Division of Conservation Services, the state agency within the DNR that formerly had oversight over the Wetlands Protection Act (Wetlands protection is now under DNR's Division of Water Resources), reports that in all cases where commissions have set down “orders of conditions” on wetlands development, over two-thirds have remained uncontested by either developers or private citizens. And the majority of the remaining cases are those contested by the Commissioner of Natural Resources, whose agency holds review power over orders of conditions. These kinds of problems are diminishing as the commissions correct technical deficiencies in the drafting of orders.

TOP TEN RECEIVERS OF BOR FUNDS

Under the federal Bureau of Outdoor Recreation's Land and Water Conservation Fund, local and state agencies can be reimbursed up to 50 percent of the costs for acquisition and development of public outdoor recreation areas. In many cases the conservation commission is the local agency instrumental in obtaining BOR funds. Since the Fund's inception in 1965, BOR has allocated over $24.5 million to Massachusetts. Total reimbursements paid to the Commonwealth and its municipalities was nearly $2.9 million in fiscal 1973. The following list ranks the state's top ten communities in order of amount of lands purchased with BOR funds:

Rank	Community	Acres Purchased	BOR ($)
1	Lincoln	564 acres	$873,600
2	Lenox	247	20,000
3	Littleton	220	33,000
4	Granby	194	50,000
5	Georgetown	193	93,200
6	Pittsfield	168	211,500
7	Stoughton	144	57,200
8	Carlisle	142	134,600
9	Harvard	103	84,600
10	Belmont	70	277,900

dications that local commissions are fostering forms of ecological and political isolationism. In matters of open space and recreation lands, some affluent commissions have been very reluctant to cooperate with their less well-to-do neighbors for fear of having to share their natural resources. More disturbing, snob zoning, or large lot zoning to exclude "undesirables" from living in a town, has reared its ugly head under the guise of conservation.

In the final analysis then, if the conservation commissions are to really exert a positive and lasting influence, they will have to extend themselves beyond an exclusive commitment to the local environment. Their efforts must be directed now to the needs of the larger metropolitan landscape and regional environment.

COMMISSIONER'S CORNER:

SOME THOUGHTS ON ASSISTING CONSERVATION COMMISSIONS

Since its beginnings in Massachusetts in 1957, the conservation commission movement has spread to other states in the northeast, including Maine, New Hampshire, Connecticut, Rhode Island, New York and New Jersey. Nowhere though is it as deeply established as part of local government than in Massachusetts.

Today 319 out of 351 communities in the Commonwealth have commissions. Their functions range from land acquisition, recreation development and planning to forest management, beautification and cleanup campaigns. As the local agencies responsible for controlling development on wetlands (The Wetlands Protection Act, Chapter 784 of the Acts of 1972), the Massachusetts conservation commissions have been invested with regulatory powers that no other state's commissions hold.

Yet because of their growing functions and responsibilities, the commissions in the Commonwealth have assumed a greater role in local environmental protection, and with this a greater burden. They are now expected to deal with such complex environmental problems as wetlands regulation, water pollution control, solid waste disposal and natural resource planning. But as they stand now, the commissions sorely lack the expertise and technical assistance to do the job.

Many communities are seeking ways of supplying these professional services to conservation commissions. Concord, for example, has setup a town Department of Natural Resources that works closely with the commission. Chelmsford is trying to provide some technical training for its commission by offering members a college course in hydrology. A number of communities are enlisting the aid of lawyers, biologists, engineers and other specialists living in the town to serve as associates on the commission. A few affluent towns are hiring outside consultants to provide the necessary technical assistance. But unfortunately for most towns, both available talent and money are in short supply.

Clearly the name of the game to obtain technical assistance is money. The recently completed Ford Foundation Program to Assist Municipal Conservation Commissions gave a nudge in the right direction. The program offered conservation commissions matching grants up to $5000 to undertake such local environmental projects as natural resource inventorying, water quality monitoring, conservation education and solid waste planning. Massachusetts communities reaped their share of grants, with the outstanding example of Boston and Brookline receiving twin grants of $5000 a piece to aid in the planning of the Charles River Greenbelt Park.

The purpose of the Ford Program was to stimulate local and state governments to supply permanent means of funding to continue projects that the grants helped launch. Which leads us to the crucial question: Where will more money and assistance come from? Maybe a few ideas will provide some food for thought.

Perhaps a statewide training program for conservation commissions could be established. Or maybe a pool of technical experts available to local conservation commissions could be organized on a state level. Federal largess should not be overlooked either. A community can use its Revenue Sharing (State and Local Assistance Act of 1972, P.L. 92-572) funds to acquire technical assistance. The Bureau of Outdoor Recreation's Land and Water Conservation Fund, which reimburses communities up to 50 percent of the costs of purchasing and developing outdoor recreation land, could perhaps, be extended to provide funds for land-use and conservation planning.

Another intriguing possibility for a significant source of revenue lies on the horizon. Under the Federal Coastal Zone Management Act of 1972 (P.L. 92-583), financial assistance will be available to states to develop and administer programs for managing our coastal areas. There are 77 coastal communities in the Commonwealth. We are currently studying the role these communities — particularly their conservation commissions — could play in the management of coastal lands and water. Such a role could mean both funds and technical assistance for the conservation commissions.

But if Massachusetts is to continue at the forefront of the conservation commission movement, a movement which it pioneered, the state will have to assume the major responsibility for providing funds. In the Self-Help Program, there is precedent for action. The commissions were limping along until the 1960s when the state Self-Help Program — which reimburses communities up to 50 percent of the costs for acquisition of conservation lands — dangled the financial carrot that revived the entire movement.

What needs to be done now is to setup a similar-type Self-Help Program to assist in such areas as land-use planning, wetlands regulation and environmental education. Only if funds are provided meadows representing about 11 percent of the town's total area. This year the town appropriated $100,000 for land acquisition plus $10,000 more for the conservation fund.

Other Cape towns are also responding to both the spiraling summer vacation industry as well as rising year-round residential growth. Sandwich appropriated $1.5 million for land acquisition this year. And in towns like Barnstable (year-round population swells from 24,000 to 57,000 in summer) and Harwich (from 7000 people to 21,000 in summer), conservation commissions continue to slug away at uncontrolled development.

Success Stories

While the patterns of commission accomplishments bear a relationship to the urban, suburban or rural setting, the fact is there are many strong and active commissions throughout the entire state. More importantly, a commission's accomplishments can not be measured only by the amounts of money a town appropriates for conservation land acquisition. Countless achievements, many of them small, unsung victories for environmental protection, abound.

In Danvers, the conservation commission spearheaded the drive to save 90 percent of the town's wetlands. Westport's commission developed a desperately needed sand-dunes stabilization program. Falmouth and Middleboro passed wetlands restriction by-laws thanks to the efforts of their commissions. The Georgetown commission led the drive to protect the municipal water supply. In Westfield, the commission developed a sediment-erosion control program. Through the efforts of its commission, Holden acquired a trout brook, town forest and a day camp area with the potential for environmental education.

The commission in Boylston, with the help of the boyscouts, established a town nursery. In Belmont, the commission purchased an expansive tract of land called Rock Meadow and converted a section of it into a community vegetable garden. With help from local conservation groups, the Andover commission setup bird walks and constructed water impoundments in the Pomp's Pond area. In Wilmington, the commission purchased $250 worth of conservation books for the town library.

Impressive achievements were also scored by conservation commissions in rural areas. Led by their commissions, the towns of Lee and Lenox undertook a joint project to acquire 15-acre Laurel Lake, one of the finest lakes and beaches in the Berkshires. Cost of purchase was $100,000, half of which was federally reimbursed.

Highest marks, however, go to two towns in north-central Massachusetts — Athol and Lunenburg. The record of conservation achievement in these towns is due more to a combination of commission leadership and community cooperation rather than sheer financial resources.

Athol's commission couples leadership with a combination of Yankee ingenuity and frugality to achieve its goals. Since its establishment in 1965, the commission has acquired over 1000 acres of land, a good part of which, lying in the Bears Den area, cost the town only $9 an acre after Self-Help reimbursement. Town lands are conserved both for commercial benefits as well as recreational enjoyment. Last year the town made over $10,000 in timber sales harvested from public forest lands.

Similarly, Lunenburg has made good use of available resources. The town has acquired more land, 840 acres, under the Self-Help Program than any other town in the state. Total cost of the land purchased was $43,500, nearly half of which was reimbursed by Self-Help funds. Since its establishment, in 1961, the commission has acquired or otherwise protected 940 acres of land, bringing the total to 1530 acres protected, or almost nine percent of the town's area. Their long-term goal is to protect 15 percent of the town's area.

The commission recently capped a series of acquisitions with the purchase of a 300-acre property containing two miles of stream and an active beaver colony. One key to the commission's success has been close working relations with the assessor's office, providing an open line of communication to the commission in its efforts to obtain tax delinquent lands.

The Community Vs. the Public Interest

All these conservation commission success stories, however, are now history. If these achievements were tough to come by, the promise is for an even greater struggle ahead as the business of environmental protection becomes more complex and the issues more difficult to resolve. The challenge of the '70s thus places the conservation commissions clearly at the crossroads.

First of all, if the commissions are to meet the challenge, they will have to become more professionalized. The commissions are already involved in land-use planning through the Wetlands Protection Act and the Self-Help Program which requires a commission to submit a comprehensive conservation plan to be eligible for Self-Help funds.

More and more, the commissions are becoming involved in the areas of solid waste disposal and recycling, water supplies and pollution, pesticide control and soil erosion. Several commissions report that their members are fast becoming sort of "environmental ombudsmen" in the community. All these expanded responsibilities will demand more expertise — more engineers, hydrologists, planners, biologists, soil experts, lawyers — to competently make the critical decisions in the coming years.

An even greater challenge is whether the conservation commissions can broaden their vision to deal with the environmental problems of the '70s. Such problems as water supplies, open space and recreation land, and transportation go beyond town boundaries and demand therefore, regional solutions. Yet the conservation commissions, having evolved from the traditions of home rule and local self-determination, are bound to a parochial outlook.

Recently, there have been a growing number of disquieting in-

Matthew Connolly, former Director of Conservation Services, believes the benefits from the commission's role in administering the Wetlands Protection Act far outweigh the drawbacks. "The act," says Connolly, "has served to revive many conservation commissions by increasing their importance in the town. It places responsibility and control over a vital environmental area closer to the people, and perhaps most important, it raises the level of environmental consciousness of the entire community."

Patterns of Accomplishment

How are conservation commissions faring across the state? A commission's accomplishments depend on a host of factors such as the town's affluence, leadership, tradition and community spirit. In general though, patterns of accomplishment tend to follow along urban, suburban and rural lines.

In the cities, many commissions are active, but all are struggling. Boston, in cooperation with the town of Brookline, is trying to establish a Charles River greenbelt. Springfield is fighting to preserve a cedar swamp against heavy development pressures.

A few urban commissions have managed to score impressive achievements. In Taunton, the commission has completed a soils study and natural resource inventory, nearly completed a 40-acre nature and wildlife refuge, and begun a study for developing a horseback and multiple-use trail system through a 464-acre municipal forest. And Quincy's commission has accomplished the remarkable feat of acquiring 67 acres of premium coastal property, mostly saltmarshes, for conservation and recreation purposes.

But overall the outlook for the urban commissions is not bright. Armed with little financial strength, the commissions are engaged in a continual uphill battle against massive urban bureaucracies, Byzantine city politics and overwhelming developmental pressures. The worst problem is that there just isn't very much land left to preserve. As one urban commission chairwoman put it: "It's a struggle just to keep yourself from throwing in the towel."

Room to roam and play

In the rural areas, many commissions are passive. No developmental pressures exist, reason local citizens, therefore there is no battle to fight. Many hill towns in the rural Berkshires, for instance, feel little sense of urgency about land development pressures and the townspeople there tend to suspiciously view conservation commission land acquisitions as unwanted government land grabs.

In the semi-rural towns where pressures are still invisible, but subtlety building up, a sense of false security often prevails. In Essex County, north of Boston, "Sleeping Beauties" (so-called because of the towns' attractiveness, yet their dream-like removal from outside realities) such as Wenham, Topsfield and Boxford stubbornly cling to the illusion of security. Warns Ralph Goodno, Regional Community Resource Development Specialist, "These communities are wealthy and have a significant landed gentry. But unless they zone or establish protective restrictions, they can be cannibalized like any other town."

It is in the suburbs, particularly the affluent ones ringing Boston, where the conservation commissions are generally the strongest. Here is where the pressures of development are greatest, but the financial and human resources to cope with the pressures are plentiful.

Take a few examples. Lexington budgeted over $100,000 this year for the purchase of conservation lands. Acton grants its conservation commission $100,000 annually for land acquisition. Concord paid out $286,000 — of which $143,000 was reimbursed through the Self-Help Program — for a 92-acre open space area called Punkatasset Hill. Framingham upped that, paying out $317,000 — of which $79,500 was reimbursed — for the 55-acre Macomber Estate. Marshfield passed 14 articles at its town meeting this year calling for the acquisition of conservation lands worth nearly $744,000. And Weston (one of the most affluent communities in the Commonwealth with a median income per family of $23,570 compared with the state average of $10,835) floated a $2.8 million bond issue for the purchase of conservation lands.

Cape Cod, whose natural beauty is threatened by uncontrollable growth, is another area with a number of vigorous conservation commissions. In Dennis, for example, where year-round population swells from 8000 to 30,000 inhabitants in summer, the reconciliation of growth with irreplaceable natural values has become top priority. In 1967 Dennis, with a big push from its commission, authorized an expenditure of $652,000 to buy 1400 acres of marsh, dunes, woodland, swamp and can we hope that the conservation commissions will meet the challenge of protecting our environment in the coming years.

Arthur W. Brownell

WHERE TO FIND A HELPING HAND

Below is a list of several organizations that offer assistance or at least a sympathetic ear to conservation commissions:

MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES — through its Division of Conservation Services provides information and assistance to commissions. Conservation Services coordinates the federal Bureau of Outdoor Recreation's Land and Water Conservation Fund in the state and administers the Self-Help Program. The Division of Water Resources, which now administers the various wetlands restrictions acts, also offers assistance. For further information contact: Boston headquarters, or the DNR's Associate Park and Regional Supervisors at Myles Standish S.F., So. Carver; Willard Brook S.F., W. Townsend; Clinton Nursery, Clinton; Amherst Nursery, Amherst; or Pittsfield S.F., Pittsfield.

CONSERVATION DISTRICTS — make available the services of the U.S. Soil Conservation Service and Natural Resource Technical Teams. SCS conducts, at 50 percent cost to the town, a soil survey — which is fundamental to town planning. Natural Resource Technical Teams, consisting of specialists from SCS, state Divisions of Forests and Parks and Fisheries and Game, and the County Extension Service, among providing other kinds of professional assistance, conduct a natural resources inventory for a town. These inventories are instrumental for determining conservation and recreational sites such as nature study and wildlife areas, town forests, trails and subsurface water supply areas.

MASSACHUSETTS ASSOCIATION OF CONSERVATION COMMISSIONS — is a non-profit, voluntary association of conservation commissions in the state. Twice a year MACC conducts workshops to educate commission members on new conservation methods and tools. Individual assistance is offered to municipalities wishing to form a conservation commission and to existing commissions facing implementation problems.

CONSERVATION LAW FOUNDATION OF NEW ENGLAND — provides legal assistance to commissions. This includes interpretation of environmental laws and protection techniques, advice on the funding procedure for acquiring conservation lands, assistance on wetlands regulations, and referral to lawyers specializing in environmental affairs.

COOPERATIVE EXTENSION SERVICE — through Community Resource Development Specialists, conducts workshops, conferences and field studies in such environmental protection and improvement areas as land-use planning, solid waste disposal and recycling. The 12 Resource Development Specialists are headquartered at County Extension Service offices throughout the state.

PRIVATE ORGANIZATIONS — include the Massachusetts Audubon Society, Berkshire Natural Resource Council, Association for the Preservation of Cape Cod, Sierra Club, League of Women's Voters, and various watershed associations, trusts and foundations. All of these organizations supply conservation and natural resources information, and when possible, direct assistance in environmental protection and improvement.

SELF HELP'S TOP TEN

The Self-Help Program, administered by the Division of Conservation Services in the state's Department of Natural Resources, offers town and cities with conservation commissions up to 50 percent reimbursement for the cost of land purchased or developed for conservation or passive outdoor recreation. BOR's Land and Water Conservation Fund and DNR's Self-Help Program may be applied together. In that case a community may receive up to 75 percent reimbursement for the cost of purchasing land. Since its inception in 1960, the Self-Help Program has paid out over $5 million in reimbursements to 461 projects in 128 communities. Municipalities received $750,000 in Self-Help reimbursements in fiscal 1973. The following list ranks the state's top ten communities in order of amount of lands purchased with Self-Help funds:

Rank	Community	Acres Purchased	Self-Help ($)
1	Lunenburg	840 acres	$ 23,300
2	Lincoln	743	74,000
3	Athol	718	7,300
4	Barnstable	663	110,000
5	Duxbury	525	265,600
6	Brewster	480	52,000
7	Amherst	422	48,400
8	Pittsfield	413	105,700
9	Wilbraham	404	58,500
10	Littleton	403	43,800

DIVISION DIRECTORS

CONSERVATION SERVICES
Joel A. Lerner 727-3170

FORESTS AND PARKS
Bruce S. Gullion 727-3180

LAW ENFORCEMENT
Kenneth A. Crossman 727-3190

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